

**Arja Haapasaari**

**The Hunters of Lost Parcels**

**An activity-theoretical study of the emergence and sustainability of workers' transformative agency**

Doctoral dissertation, to be presented for public discussion with the permission of the Faculty of Educational Sciences of the University of Helsinki in the Hall 230, Aurora Building, Siltavuorenpenger 10, on Friday, August 28th 2020, at 12 noon

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#### **Abstract**

The study examines the emergence, evolution and sustainability of workers' transformative agency in organizational change efforts. Traditionally, changes and transformations in organizations are initiated by the management and special development units, and the voices, experience and knowledge of all the involved parties are not listened to or taken into consideration. This study challenges the traditional way of conducting development projects and presents the special interventionist methodology of the Change Laboratory (CL). Development projects often utilize models and practices invented in different contexts and organizations, and thus do not necessarily pay enough attention to specific local circumstances. The CL engages the actors themselves in work development and supports the emergence of transformative agency. The transformative agency of the actors examines the current local activity and the historical roots behind the problems and contradictions caused by the clash between the past, present and possible future forms of activity. This study focuses on how transformative agency emerges, how it can be sustained, how actions of transformative agency support the construction of innovation paths, and how power relations in particular impact on the implementation or termination of innovative ideas.

The study positions its theoretical framework in the field of previous studies focusing on agency, learning and work development in organizational changes and transformations. Social and organizational theories have widely discussed the key theoretical conceptions applied in this study. The most promising theoretical approaches in the field from the viewpoint of this study are the Cultural-historical activity theory (CHAT), the Institutional theory (IT), the Actor-network theory (ANT) and the Material engagement theory (MET). The study reviews the central scholarly literature concerning IT, ANT and MET and places it in dialogue with CHAT, on which its theoretical and methodological principles are based. CHAT is a specific qualitatively-oriented theory that examines collective human activity in local settings and offers a theoretical and methodological framework for studying transformative agency and work development as learning processes.

The study consists of a CL intervention conducted in a work unit at one of the sorting centres of a postal and logistics services company in Finland, and an

extensive follow-up during which the sustainability of transformative agency and the constructed innovation paths were examined. The empirical data were collected over three years, from 2010 to 2013.

The findings of this study contribute to CHAT and further develop its methodological principles. This study contributes in particular to the analysis of transformative agency by extending the methods for analysing discursive expressions of transformative agency. The analysis of innovations and power relations also push the boundaries of knowledge in CHAT a little bit further.

The findings indicate that when people are provided with opportunities, forums and tools for participating, they take agentic actions and initiate innovative solutions to collaboratively develop joint activity. Transformative agency emerges in situations of conflicting stimuli in local activity. It manifests itself in the examination of problems, conflicts and contradictions in an activity, and develops existing ways of action. Agentic actions are initiated by individuals but require joint forums to evolve in collective activity. The emergence and evolution of transformative agency is a long, collective learning process which needs to be nurtured by new practices and tools if it is to endure practical day-to-day working life.

The findings of this study show that innovative ideas and solutions can arise from problems, tensions and contradictions in an activity system when people collaboratively analyse their practices. These can be either incremental developmental steps, radical changes in tools, processes and practices, or system-level changes that transform the entire course of action. As well as separate product or service embodiments, innovations can be ongoing processes that continuously develop the activity.

By definition, transformative agency breaks away from the existing frame of action and takes initiatives to transform it. Thus, transformative agency opens up new opportunities and supports the emergence of new power. Power emerges from the activity of practitioners. It is not only a medium; it is also an effect of collective activity. The new power breaks the existing power structures and empowers the parties involved in collaborative work development.

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**Keywords:** cultural-historical activity theory, Change Laboratory, formative intervention, transformative agency, double stimulation, innovation, power relations, path creation, sustainability

**Arja Haapasaari**

### **Kadonneiden pakettien metsästäjät**

Toiminnanteoreettinen tutkimus työntekijöiden muutostoimijuuden syntymisestä ja kestävyydestä

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#### **Tiivistelmä**

Tutkimus tarkastelee työntekijöiden muutostoimijuuden syntymistä, kehitystä ja kestävyyttä organisaatiomuutoksissa. Perinteisesti organisaatiomuutokset ja transformaatiot ovat johdon ja erityisten kehitysyksiköiden käynnistämiä. Tällöin kaikkien osapuolten ääni, kokemus ja tietämys eivät tule kuulluksi, eikä niitä oteta huomioon. Tämä tutkimus haastaa perinteisen projekteilla kehittämisen tavan ja esittelee erityisen interventionistisen Muutoslaboratorion (ML) metodologian. Usein kehitysprojektit hyödyntävät erilaisissa konteksteissa ja organisaatioissa kehitettyjä malleja ja käytäntöjä minkä vuoksi ne eivät välttämättä kiinnitä riittävästi huomiota paikallisiin erityisolosuhteisiin. ML osallistaa itse toimijat työn kehittämiseen ja tukee muutostoimijuuden syntymistä. Toimijoiden muutostoimijuus tutkii nykyistä paikallista toimintaa ja niiden ongelmien ja ristiriitojen takana olevia historiallisia juuria, jotka ovat aiheutuneet aikaisemman, nykyisen ja mahdollisen tulevan toimintatavan yhteentörmäyksestä. Tämä tutkimus keskittyy kysymyksiin miten muutostoimijuus syntyy, miten sitä voidaan ylläpitää, miten muutostoimijuuden teot tukevat innovaatiopolkujen rakentamista ja miten erityisesti valtasuhteet vaikuttavat uusien innovatiivisten ideoiden toteutukseen tai lopettamiseen.

Tutkimuksen teoreettinen viitekehys asettuu niiden aikaisempien tutkimusten kenttään, jotka keskittyvät toimijuuteen, oppimiseen ja työn kehittämiseen organisaatiomuutoksissa ja transformaatioissa. Tässä tutkimuksessa käytettyjä keskeisiä teoreettisia käsitteitä on käsitelty laajasti yhteiskunta- ja organisaatioteorioissa. Lupaavimmat teoreettiset lähestymistavat kentällä tämän tutkimuksen näkökulmasta ovat kulttuuri-historiallinen toiminnan teoria (CHAT), instituutioteoria (IT), toimija-verkkoteoria (ANT) ja materiaalisen sitoumuksen teoria (MET). IT:n, ANT:n ja MET:n keskeistä tieteellistä kirjallisuutta käydään läpi ja tarkastellaan vuoropuhelussa CHAT:n kanssa, koska tämän tutkimuksen teoreettiset ja metodologiset periaatteet perustuvat CHAT:iin. CHAT on erityinen laadullisesti suuntautunut teoria, joka tutkii ihmisten kollektiivista toimintaa paikallisissa ympäristöissä ja tarjoaa teoreettisen ja metodologisen viitekehysten oppimisprosesseina tapahtuvien muutostoimijuuden ja työn kehittämisen tutkimiseen.

Tutkimus koostuu ML interventtiosta, joka toteutettiin posti- ja logistiikkapalveluja tarjoavan suomalaisen yhtiön lajittelukeskuksessa sijaitsevassa työyksikössä ja pitkäkestoisesta seurantajaksosta, jonka aikana muutostoimijuuden ja rakennettujen innovaatiopolkujen kestävyttä tutkittiin. Tutkimuksen aineisto on kerätty kolmen vuoden aikana vuosina 2010–2013.

Tutkimuksen tulokset myötävaikuttavat toiminnan teorian ja sen metodologisten periaatteiden kehittämiseen. Tämä tutkimus on erityisesti edistänyt muutostoimijuuden analysointia laajentamalla muutostoimijuuden diskursiivisten ilmausten analyysimenetelmiä. Lisäksi innovaatioiden ja valtasuhteiden analyysi siirtää toiminnan teorian tietämyksen rajoja hieman pidemmälle.

Tulokset osoittavat, että kun ihmisille tarjotaan mahdollisuuksia, keskustelufoorumeita ja työkaluja osallistua, he toimivat ja esittävät yhdessä innovatiivisia ratkaisuja yhteisen toiminnan kehittämiseksi. Muutostoimijuus syntyy ristiriitaisten ärsykkeiden tilanteissa paikallisessa toiminnassa. Se ilmenee toiminnassa esiintyvien ongelmien, konfliktien ja ristiriitojen tarkastelussa ja olemassa olevan toiminnan kehittämisessä. Toimijuuden teot ovat yksilöiden alulle panemia, mutta vaativat yhteisiä keskustelufoorumeita kehittyäkseen kollektiivisessa toiminnassa. Muutostoimijuuden syntyminen ja kehittyminen ovat pitkä ja kollektiivinen oppimisprosessi, jota täytyy ruokkia uusilla käytännöillä ja työkaluilla, jotta se kestää päivittäisessä käytännön työelämässä.

Tämän tutkimuksen tuloksiin pohjautuen voidaan väittää, että innovatiiviset ideat ja ratkaisut syntyvät toimintajärjestelmän ongelmista, jännitteistä ja ristiriidoista, kun ihmiset yhdessä analysoivat omia käytäntöjään. Ne voivat olla vähittäisiä kehitysaskelaita tai radikaaleja muutoksia työkaluissa, prosesseissa ja käytännöissä tai järjestelmätason muutoksia, jotka muuttavat koko toiminnan suuntaa. Yksittäisten tuotteiden tai palveluiden lisäksi innovaatiot voivat olla jatkuvia prosesseja, jotka yhtäjaksoisesti kehittävät toimintaa.

Määritelmän mukaan muutostoimijuus irrottautuu olemassa olevista toiminnan puitteista ja esittää aloitteita niiden muuttamiseksi. Siten muutostoimijuus avaa uusia mahdollisuuksia ja tukee uuden vallan syntymistä. Valta syntyy ammatinharjoittajien toiminnasta. Se ei ole vain väline vaan kollektiivisen toiminnan seuraus. Uusi valta rikkoo olemassa olevia valtarakenteita ja valtuuttaa osalliset osapuolet kollektiiviseen työn kehittämiseen.

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*Avainsanat:* kulttuuri-historiallinen toiminnan teoria,  
Muutoslaboratorio, formatiivinen interventio, muutostoimijuus,  
kaksoisärsyke, innovaatio, valtasuhteet, polun luominen, kestävyys

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Helsinki, August 28, 2020

Arja Haapasaari



# CONTENTS

ACKNOWLEDGEMENTS .....	7
ORIGINAL ARTICLES .....	12
1 INTRODUCTION .....	13
1.1 Transforming field of logistics as a research context.....	14
1.2 Research objective and research questions .....	17
1.3 Structure of the summary .....	18
2 THREE THEORETICAL APPROACHES TO AGENCY IN ORGANIZATIONS.....	20
2.1 Institutional theory and agency .....	21
2.1.1 Emergence of agency .....	21
2.1.2 Innovations .....	23
2.1.3 Power relations.....	24
2.2 Theories of material agency .....	25
2.2.1 Emergence of agency .....	25
2.2.2 Innovations .....	29
2.2.3 Power relations.....	30
2.3 Transformative agency within cultural-historical activity theory .....	31
2.3.1 Emergence of transformative agency .....	31
2.3.2 Innovations .....	36
2.3.3 Power relations.....	38
2.4 Synthesis and prioritization of theoretical approaches.....	40
3 METHODOLOGICAL FRAMEWORK.....	44
3.1 Formative interventions and the Change Laboratory method .....	44
3.2 Solution Services as a research site.....	47
3.3 Change Laboratory intervention in Solution Services .....	49
3.4 Data collection methods .....	55
3.5 Analysis methods .....	59
3.6 Sustainability and continuity of formative interventions .....	65
3.7 Generativity and quality of qualitative research.....	67

3.8 Position of the researcher-interventionist .....	71
4 MAIN FINDINGS .....	75
4.1 Research question 1 .....	75
4.2 Research question 2 .....	78
4.3 Research question 3 .....	81
4.4 Research question 4 .....	85
5 DISCUSSION AND CONCLUSIONS.....	89
5.1 Transformative agency .....	90
5.2 Innovations .....	93
5.3 Power relations .....	95
6 IMPLICATIONS FOR ACTIVITY THEORY AND METHODOLOGY .....	98
6.1 Theoretical implications .....	98
6.2 Methodological implications .....	100
7 EPILOGUE: DISCUSSIONS WITH TOM .....	103
REFERENCES .....	107
APPENDIXES .....	120

## **Appendixes**

Appendix 1. List of publications .....	120
Appendix 2. Questions in interview guides for CL participants and other informants before start of intervention.....	121

## **List of Figures**

Figure 1. General model of the activity system (Engeström, 1987, p. 78).....	32
Figure 2. Model of double stimulation (Sannino, 2015, p. 10) .....	34
Figure 3. Detected problems and disturbances in activity system of Solution Services .....	54
Figure 4. Structure of double stimulation in Solution Services, modified from Haapasaari and Kerosuo (2015, p. 38) .....	80
Figure 5. Initiatives and innovations for detected problems and disturbances in activity of Solution Services .....	83
Figure 6. Four fields of power relations and number of initiatives (Haapasaari, Engeström & Kerosuo, 2018, p. 219).....	85

## **List of Tables**

Table 1. Synthesis of the theoretical approaches used in summary .....	42
Table 2. Overview of CL sessions (S = session).....	50
Table 3. Data collected during CL intervention process and analysed in this study .....	56
Table 4. Data collected from Solution Services unit in 2010–2013 .....	57
Table 5. Summary of dissertation articles .....	63
Table 6. Summary of research questions and results .....	87

## **Pictures**

Picture 1. Analysis of disturbances in activity system .....	52
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# ORIGINAL ARTICLES

## Article I

Haapasaari, A., Engeström, Y. and Kerosuo, H. (2016). The emergence of learners' transformative agency in a Change Laboratory intervention, *Journal of Education and Work*, Vol. 29 No. 2, pp. 232–262.

## Article II

Haapasaari, A. and Kerosuo, H. (2015). Transformative agency: The challenges of sustainability in a long chain of double stimulation, *Learning, Culture and Social Interaction*, No. 4, pp. 37–47.

## Article III

Haapasaari, A., Engeström, Y. and Kerosuo, H. (2018). From initiatives to employee-driven innovations, *European Journal of Innovation Management*, Vol. 21 No. 2, pp. 206–226.

# 1 INTRODUCTION

The continuous changes in society, in companies, organizations and working life are challenging the established forms of activity. The rapid development of information and communication technologies is revolutionizing the way in which business is carried out and offering various new opportunities. Customers are expecting new, more efficient products and services. New collaborators and suppliers are coming into being. The rules and legislation regulating activity are changing. To respond to the changes and demands of the operational environment, organizations must continuously develop their activities.

The traditional way of developing activities through projects that progress linearly according to a project plan and exact timetable, with specific objects and budgets can be too slow (Honadle & Rosengard, 1983, p. 300) and discontinuous (Engeström, Kerosuo & Kajamaa, 2007, p. 3). Continuous change requires more agile ways of development. Thus, work development with light experiments has become more common. However, the results from various separate projects do not necessarily remain alive in everyday work activity, as projects end before these results are properly implemented in production. A new project is already lurking behind the corner. Furthermore, when the good practices invented in different projects are disseminated to other organizations and workplaces, the implementation is often weak and the success rate low (Alasoini, 2018). Engeström (2011, p. 8) states that when a change project has clearly specified and expected outcomes, the voice and agency of the practitioners goes unheard. However, the expert competences, skills and knowledge of every person involved are valuable resources that should be taken into account.

The idea of change agency has been the focus of organization development research. The role of change agent has been given to individual charismatic heroes, external consultants or facilitators, and more recently to teams (Caldwell, 2003). Change agency as a team process comes close to the idea of collective transformative agency, which is at the heart of this study.

As a development and HR professional I have worked closely with practitioners and management and seen the challenges and needs for change in working life, in the activity of organizations and in the everyday work activity of practitioners. I have met various phenomena at workplaces, including different ways of human resource development, processes of continuous improvement and suggestion schemes, and the role of power relations in work development. The agency and development of the work activity studied here is thus anchored in both my personal work history and competence, and in the everyday work activity of practitioners. My interest as a development and HR professional is in facilitating collaborative work development, and as a researcher, in examining the agency of

practitioners when they are provided with opportunities, forums and tools to develop work activity.

In this study, I examine the changes and transformations in a large state-owned company in Finland, the Posti Group. The organization is an institution and has a long history, and its roots lie deep in society. It produces nationwide postal and logistics services. The employees who participated in the study carry out material work, which is mostly routine. However, they were very eager to develop their work activity.

This study belongs to the field of studies on agency, learning and work development, and especially those focusing on agency in organizational changes and transformations. Four theoretical approaches arose as the most promising in my research context. The Institutional theory (IT) (e.g., Lawrence, Suddaby & Leca, 2009; Suddaby & Viale, 2011) focuses on actors and activities in institutions and organizations. The Actor-network theory (ANT) (e.g., Latour, 2005; Law & Callon, 1992) and the material engagement theory (MET) (Knappett & Malafouris, 2008; Malafouris, 2013) highlight the agency of things and stress the mutual engagement of humans, non-human things and the environment. The Cultural-historical activity theory (CHAT) (e.g., Engeström, 2011; Sannino, Engeström & Lemos, 2016) examines human activity in historically developed activity systems. It offers a theoretical framework for examining learning and the potentially transformative agency of actors in organizational change efforts. The theoretical and methodological foundation of this study is based on CHAT, as the concepts and analytical tools created within this theory have proven to be useful in relation to my interests. As my main theoretical concepts, transformative agency, innovation and power relations have been examined in IT and ANT, it was useful to place them into dialogue with CHAT. In addition, MET and ANT offer an interesting viewpoint to materiality and the agency of things, and to how material artefacts mediate human activity. The concept of mediation also plays a key role in CHAT. The interventionist methodology of the Change laboratory (CL) developed in CHAT supports the emergence of transformative agency and innovative collaborative learning. The empirical data of this study comprise a CL intervention, which I conducted in one of the work units of the Posti Group.

Next in this introductory chapter, I present the context of my research: the company and the challenges it faces in a turbulent and highly competitive market. After this, I discuss my theoretical concepts, the aim of my research and my research questions. Then, I present the structure of this study.

## **1.1 Transforming field of logistics as a research context**

The Posti Group (former Itella Corporation) is a Finnish, regionally operating service company that specializes in customer product and information flow management. The company offers solutions for logistics and delivery services in

B2B and B2C markets, and solutions for invoicing and financial management to corporate customers. The State of Finland owns all the shares of the company. Although the Posti Group has a track record of nearly 400 years, it is far from a stable institution. In 2019, the Group operates in 11 countries in Europe and Russia and employs approximately 22 000 members of staff. The head office is in Helsinki, Finland.

Although the numerous changes and developments in the operational environment, especially in the field of ICT, offer opportunities for the company, they also create challenges. Electronic commerce has grown rapidly in recent years and thus, shopping has largely moved from traditional shops to the internet. The reliability of an online shop and the fluency of the shopping experience require well-functioning logistics services. In the development of logistics operations, the company has utilized technological applications to combine information from several different sources. Their GPS system enables the follow-up of vehicles and consignments. RFID technology enables the company and the customers to follow packages and corporate customers to follow their product flow. The company has tested several new solutions and technological tools for the handling processes of goods in their logistics centres. For example, speech-controlled sorting is one innovation for increasing the effectiveness of sorting and reducing mistakes in production.

The delivery operations of the company are regulated by legislation and controlled by the Finnish Communications Regulatory Authority. The special status of the company, a former monopoly, restricts some of the options for business development. The company has to provide every household in Finland with postal delivery services even though nationwide delivery is not very profitable in a country with such scattered habitation. Moreover, the decreasing trend in the volumes of traditional letters, postcards and newspapers has steadily intensified in recent years.

The transition of the financial processes from companies and customer invoicing to the electronic world offers growth potential for the company. The financial transactions of the company have increased. The integration of information on clients' and partners' networks with those of the company offers the company new business opportunities.

Technological development in the field of ICT, logistics and financial processes is rapid and offers solutions to improve and optimize the work carried out in the company. However, development requires investments in material, especially in human resources. The changes need new knowledge and capabilities. The work requires motivated, committed and responsible workers. The company has identified several concrete issues that have developed in the company's culture. The speed of decision-making has improved at all hierarchical levels and decision-making has been delegated to those who actually carry out the work. The organizational structure has been simplified in order to decrease multilevel

coordination and clarify profit responsibility. Furthermore, to improve and maintain high job motivation, the organization of work, management methods and leadership skills has been developed. The strategic goal of the company is to create a unified leadership culture and grant the same high-quality leadership to all members of its personnel.

Internal and external relations are especially important to the company. Trade unions and especially the Finnish Post and Logistics Union are strong power players in the field. These organizations monitor and look after the interests of the workers. They develop activity and actively negotiate with the representatives of the company. The media's threshold for publishing news about significant events in a state-owned company is low, and consumers and corporate customers take up possible delivery and service problems they have experienced more easily than before on social media.

Due to these challenges, the company constantly aims to develop services through a customer-oriented approach, to optimize the supply chain end-to-end, to improve cost-efficiency, to maintain the high quality of services, and to naturally secure its sustainable growth. Moreover, the company aims to pay special attention to customer service and communication to maintain their good image as a reliable service provider.

The site of this research was one of the sorting centres of the Posti Group. The sorting centre is part of the nationwide delivery system in Finland. The volumes handled at the centre have grown rapidly, especially in the last few years. The growth of internet shopping has increased the volume of parcels. Roughly 300 employees work in three shifts at the centre.

One of the units in the sorting centre is Solution Services. The role of this unit is to handle deviations that may occur during the sorting process at the sorting centre or during any other phase of Posti's delivery process. The sorting centre has an ISO 9001 and an ISO 14001 certified quality system. A deviation is defined in the quality system as follows: 'A deviation is an exception from the designed process or an exception caused by incorrect delivery of the client which effects on the process, costs and/or the service level promised to the client' (Quality Handbook of the sorting centre). Solution Services handle misdirected, damaged or undelivered packages, packages with faulty address labels or otherwise unclear packages. The volume of the parcels handled at the centre has been growing, and the number of problematic cases has also increased.

I collected the information for the company presentation in this chapter from several sources: the company website, articles in the internal Pointer magazine and the customer newspaper Flow, different documents, and interviews of the company employees. Appendix 1 contains a detailed list of the publications.



## 1.2 Research objective and research questions

I am especially interested in how ordinary workers can participate in work development and play an even bigger role in initiating and promoting change in an activity. Changes in activity may open up avenues for those involved to participate and act. Most often, people are interested in and are motivated to influence issues arising from their own operational environment. Therefore, transformative agency, innovation and power relations are central concepts in my research. In CHAT, transformative agency means changing or breaking the given frame of action and creating new practices. Questioning current practices and issues that are taken for granted, resisting, initiating innovative development ideas, and committing to implementing new ways of working are ways in which to express transformative agency. Thus, I maintain that transformative agency should be taken as a point of departure when planning changes in activity and arranging opportunities and forums in which to participate.

Traditionally, business and work development are initiated and implemented by management and special support functions such as R&D and HR units, in a top-down way or from the side. Transformative agency breaks traditional power relations. It emerges in local activity, often bottom-up or from the side. Thus, it creates new power.

On the one hand, in working life people are expected to act agentially. Initiative, commitment and work development are included in job descriptions (Gee, Hull & Lankshear, 1996). On the other hand, however, the monitoring of work has increased, and workers are rewarded for achieving set targets. Thus, from the perspective of the emergence of transformative agency, a culture of interaction is essential at workplaces. Who will be heard, who has the right to talk and what are the consequences of this talk (Greeno, 2006)?

This study was inspired by discussions between me, the production manager of the sorting centre and the supervisor of Solution Services of the Posti Group during the summer and early autumn of 2010. At this time, the work unit was struggling with several problems. I suggested to the manager and the supervisor that we could find solutions to the problems using a CL intervention. The idea was to engage the employees in work development and take responsibility for resolving the problems and bottlenecks.

The aim of this study was to examine the emergence and evolution of transformative agency among the practitioners in a work organization during a CL intervention, and the sustainability of transformative agency after the intervention. Another purpose was to obtain information on how the sustainability of transformative agency can be supported. A final aim was to determine whether the initiatives expressed during and after the intervention constructed paths and how power relations impacted on the implementation of the initiatives and innovations.

The research questions are:

RQ1. How does the participants' transformative agency emerge during a Change Laboratory intervention?

RQ 2. How is the participants' transformative agency sustained during a follow-up period after a Change Laboratory intervention?

RQ3. How are initiatives developed in practice?

RQ4. What is the role of power relations in the implementation of an initiative?

I elaborate on the questions and their answers in Chapter four.

### **1.3 Structure of the summary**

This dissertation comprises this summary and three articles published in international scientific journals. The summary consists of seven chapters which discuss the theoretical approach, the methodological framework and the findings of the research questions. The three scientific articles are presented after the summary.

In this chapter I have introduced the research topic and the context in which the study was conducted to the reader. I have emphasized that transformative agency is a valuable resource for those involved in organizational changes that need deeper understanding and further research. I have presented the transforming field, the activity and the challenges faced by the company in this research context.

The second chapter discusses the theoretical framework and the theoretical concepts applied in this study from the perspectives of IT, ANT, MET and CHAT. I examine the differences and similarities between these approaches and what they have to offer to this study.

Chapter three describes how the study is based on ethnographic methodology, especially on the methodology of formative interventions. It also describes the CL method, the site and the data, and presents the data analysis methods. The analysed data consist of discursive material and include discussions from the nine sessions of the CL intervention, the four follow-up meetings and the 10 team meetings, which all were transcribed verbatim. The rest of the collected data that were used as mirror material in the CL sessions or as support material in the analysis consisted of 32 planned interviews, of which 16 were transcribed verbatim; transcriptions comprising 126 pages; 358 pages of various documents; 15 pages of field notes, 36 photographs of the research site; and a substantial number of emails, phone calls and informal discussions with the practitioners. A Developmental Dialogue (DD) intervention was also conducted with the supervisor of the work unit during the time period of this research. This material consisted of three planned interviews. The DD intervention affected the events after the CL ended and thus, I describe it in my presentation of the practical implications of the CL intervention and this study in Chapter seven.

Chapter four presents the central findings of the three articles and elaborates on the answers to the research questions posed in this first chapter. Chapter five

discusses the research questions and findings of this study from the viewpoint of the theoretical approaches. It also presents the conclusions of the study. Chapter six discusses the theoretical and methodological implications of the study. Chapter seven is devoted to describing the role and insights of the supervisor of Solution Services and the practical implications of the study.

The three articles included in this dissertation examine the transformative agency of the practitioners during and after the CL intervention. The first article focuses on the emergence of the practitioners' transformative agency in the CL. The second article examines the sustainability of the transformative agency after the CL ended. The third article investigates the initiatives and the construction of initiative paths. The factors that contribute to the implementation of an initiative and innovation, and the role of power relations in particular, are also discussed in the third article.

## 2 THREE THEORETICAL APPROACHES TO AGENCY IN ORGANIZATIONS

Agency has been examined through a number of theoretical traditions. Psychological studies build on an individual's self-efficacy and motivated behaviour (Bandura, 2006; Deci & Ryan, 1995; Martin, Sugarman & Thompson, 2003). They most often see agency as a stable trait or property of an individual human being. Agency is seldom studied as an emerging capacity that develops during an individual's life course (Hitlin & Elder, 2007). Linguistic studies examine agency in discourse practices. Ahearn (2001) suggests that by focusing on linguistic interaction, a researcher can examine how people participate in and influence the formation of culture and social structure. Dervin and Liddicoat (2013) argue that discourse analysis provides opportunities to analyse the utterances of those participating in interaction and to examine the agency of the participating individuals. Angermuller, Maingueneau and Wodak (2014) continue that what people are entitled to say in a conversation and the effect of this talk are discursively regulated.

Social theorists often draw from the theory of practice (Bourdieu, 1977) and the structuration theory (Giddens, 1984) which highlight the interconnectedness of and tensions between actors and institutions. Practice theory builds on the notions of habitus and field and has been used to examine the relationships between individuals on the micro level and the structured systems of fields on the macro level. The duality of structure plays a central role in structuration theory. It reveals the difficulty of changing existing institutions and social structures. Even though institutions and social structures provide actors with an area of operation, they limit the actors' potential agency when they follow the rules, hence strengthening the institutions. To Giddens (1984), agency means the ability to act intentionally and is visible in purposive acts that have consequences. When influencing something an actor uses power. Thus, power is not only used in a top-down manner by dominant groups but also in a bottom-up direction when the less powerful actors resist or impact on changes in social structures (Giddens, 1984).

Caldwell (2005) states that in organizational theories, discourses of agency and organizational change shift the focus from individual to collective agency and from centred to decentred agency. The rationalist view stresses the expert role of a change agent who carries out a planned organizational change. Contextualist research examines the historical and contextual location and the change processes in which agency is embedded. Dispersalist discourses consider agency to be decentred or distributed throughout organizations. Constructionists hold the view that agency is decentred but that human actors have little rational control or power.

From the wide scholarly literature that studies agency, I have selected four theoretical approaches that are the most promising from the viewpoint of my research interests. The Institutional theory (IT) highlights the role of actors and their agency in organizational change. In this study I examine the agency of shop-floor-level employees and their opportunities to influence practices in an institution. The Actor-network theory (ANT) and the material engagement theory (MET) emphasize the agency of non-humans and the interactions and mutual engagement of human beings and things. As ANT and MET share the view that agency between humans and non-humans is symmetrical or relational, I discuss these two approaches as a whole. In this study, the mediating role of artefacts in the social interaction between people is of special interest. The Cultural-historical activity theory (CHAT) examines human activity and agency as potentially transformative and as emerging in historically evolved local activity systems. I am especially interested in the dimension of transformation and how it is considered in all these theories. I suggest that any voluntary action is not agentive, as agency, especially transformative agency, strives for change in an activity.

In the following sections, I discuss how these four theoretical approaches understand agency, especially transformative agency. Innovativeness, the initiation of innovations and power relations are closely related to agency. My aim is to review how these conceptions are examined in the four theoretical approaches.

## **2.1 Institutional theory and agency**

### **2.1.1 Emergence of agency**

In IT, agency is visible in institutional work. Lawrence and Suddaby (2006, p. 215) define institutional work as ‘the purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions’. Lawrence, Suddaby and Leca (2009, p. 15) continue that according to this definition, institutional work is purposive, which means that it is consciously and intentionally carried out by actors. The actors need to make a cognitive effort not to take the institutions for granted but to see them as social constructs that can be changed. The capacity to reflect and find opportunities for change has been stressed by Garud and Karnoe (2003) and Mutch (2007).

Institutional approaches to organization theory have traditionally emphasized the role of institutions and large corporations, and the processes of how institutions reinforce continuity and affect organizational structures, practices and the relationships among organizations and in organizational fields. More recently, the research focus has turned to actors and the activities through which they affect the institutions in which they operate (DiMaggio, 1988; Lawrence and Suddaby, 2006). To emphasize the role of actors in organizational change, DiMaggio (1988,

p. 14) formulated a concept of institutional entrepreneurship: 'New institutions arise when organized actors with sufficient resources (institutional entrepreneurs) see in them an opportunity to realize interests that they value highly'. Scholars of IT (Battilana, 2006; Dorado, 2013; Garud, Hardy & Maguire, 2007; Greenwood & Suddaby, 2006) draw from this conception and present institutional entrepreneurs as agents who pursue certain interests, act strategically and are able to conduct organizational changes by breaking dominant rules and creating new practices.

IT has often presented institutional entrepreneurs as individual (Fligstein, 2001), powerful and heroic figures who successfully create or disrupt institutions and implement radical innovations. However, this dominant view has been criticized (Lawrence, Suddaby & Leca, 2009) and the research focus has shifted towards the peripheral positions of members in a field and the day-to-day practical work of actors in institutional environments (Martí & Mair, 2009; Smets & Jarzabkowski, 2013). These actors are examined as collective actors (Lounsbury & Crumley, 2007; Maguire & Hardy, 2009) with a common factor that can be, for example, a profession (Scott, 2008; Suddaby & Viale, 2011), a status in an organization (Kraatz, 2009), a shared motive (Dorado, 2013) or a context (Van Dijk et al., 2011).

Battilana and D'Aunno (2009) have developed a relational perspective of actors and their institutional environment. This perspective is inspired by Giddens' (1984) theory of structure and Bourdieu's (1977) theory of practice, as well as the work of Emirbayer and Mische (1998) in the social sciences. The relational perspective suggests that in addition to institutions shaping individual actors, individuals can also shape institutions when engaging in institutional work. Battilana and D'Aunno (2009) follow Emirbayer and Mische's (1998) conception of agency that consists of three elements: iteration, practical evaluation and projectivity; and three temporal dimensions: the past, present and future. Hence, Battilana and D'Aunno conceptualize agency as a 'temporally embedded process of social engagement, informed by the past (in its habitual aspect), oriented towards the future (as a capacity to imagine alternative possibilities) and towards the present (as a capacity to contextualize past habits and future projects within the contingencies of the moment)' (Battilana & D'Aunno, 2009, p. 47). They argue that these three dimensions of agency enable three types of institutional work: creating, maintaining and disrupting.

The most common view of agency related to institutional work has been the future-oriented projective agency associated with the creation or disruption of institutions at the field level (Lawrence, Suddaby & Leca, 2011, p. 57). The practical-evaluative, here-and-now agency that is not aimed at social change but at day-to-day practices inside organizations has not been examined as much (Bridwell-Mitchell, 2016, p. 163). Smets and Jarzabkowski (2013, p. 1304) highlight the practical-evaluative agency of actors in bringing about changes in

their everyday work activities. Through their practical work, actors can even reconstruct current social structures. This shift of the theoretical lens from the macro perspective of agency to micro-institutional changes can offer interesting new viewpoints of the theory development, as shown by Bridwell-Mitchell (2016), Daudigeos (2013) and Smets and Jarzabkowski (2013).

The shift is also promising from the viewpoint of CHAT, as its research focus is on local actors and their ability and opportunities to transform their own activity. However, institutional theory has mostly described the concept of agency and the different typologies on the basis of empirical case studies created to categorize agency. Issues that have received less attention include factors that support the emergence and evolution of agency, and the reasons why some actors do and others do not take agentive actions in a certain context. Furthermore, Lawrence, Suddaby and Leca (2009) state that the classical issue of agency, intentionality, is critical to understanding institutional work. However, the examination of the intentionality of action is not unproblematic. It requires reviewing the degree to which intentionality is 'connected to the institutions in which it is embedded' and 'motivated to affect those same or other institutions' (Lawrence, Suddaby & Leca, 2009, p. 14).

### **2.1.2 Innovations**

The fundamental purpose of institutions is to maintain the stability of social structures (Scott, 2008, p. 222). Innovating actors in turn aim to change existing structures. IT has widely addressed this and discussed how actors are able to change institutions and innovate alternatives if their beliefs and actions are conditioned by the institutional environment they wish to change (Battilana, 2006; Battilana and D'Aunno, 2009; Holm, 1995). As a solution to this dilemma, innovating actors have been presented as institutional, heroic figures (DiMaggio, 1988) and embedded, knowledgeable actors (Van Dijk et al., 2011).

Lawrence, Suddaby and Leca (2009, p. 1) state that innovations can be either incremental small steps or substantial changes in institutionally-oriented action. According to Lounsbury and Crumley (2007, p. 1006), practical-evaluative agency in particular aims to gradually alter day-to-day practices and routines (see Feldman & Pentland, 2003). Bridwell-Mitchell (2016, p. 185) emphasizes the role of peer learning in supporting problem-solving and the innovation of alternatives to existing practices in local activity. Radical innovations have to overcome the problems of legitimacy. Van Dijk et al. (2011, p. 1510) highlight that when innovations lack legitimacy they do not correspond with current institutional elements and are thus at risk of being abandoned. New innovations face a political struggle and require negotiation with different social groups, which may regard the novel ideas as either acceptable or threatening (Garud, Hardy & Maguire, 2007, p. 960). Hargadon and Douglas (2001, p. 477) discuss the dilemma that an

innovation should be novel and beneficial to the current way of acting, but at the same time be understandable to the users and not too radical for adoption.

Lounsbury and Crumley (2007, p. 996) maintain that new practices and innovations emerge and evolve from 'naturally occurring variation in the implementation, use' in activity. They state that research in institutional theory should focus more on interactions inside organizations and relationships between other actors and activities, as well as on organizational and institutional dynamics. Furthermore, they criticize the research focus of the institutional approach for examining the establishment of innovations and new practices and neglecting the emergence and origins of innovations and novel ideas.

### **2.1.3 Power relations**

In IT, agency and power are considered closely related to each other (Lawrence, 2009). According to Lawrence (2009, p. 181), power is not a property but a relational phenomenon that is visible in the interplay between institutions and actors. Institutions impact on actors' beliefs and actions through institutional control. Actors in turn aim to create, maintain and disrupt institutions through institutional agency. Resistance refers to the efforts of actors and institutions to impose limits on institutional control and institutional agency.

Lawrence (2009) maintains that power operates in two modes. Systemic power is associated with institutional control. The main forms of control are discipline and domination, which work through routines and ongoing practices. They determine the appropriate behaviour and the options available in a certain context. Episodic power refers to the agency of actors to take strategic actions and mobilize resources. The two forms of episodic power are influence and force. Influence requires social skills and the ability to negotiate and persuade others to act as expected. Force in turn does not depend on the potential agency of others. Lawrence (2009, p. 192) states that the interaction between institutional control, agency and resistance 'determines the evolution of institutions, networks and subject positions that structure the experiences and opportunities of actors.

In IT, episodic power has recently received more research interest than systemic power. Studies of institutional entrepreneurship (DiMaggio, 1988; Battilana, 2006) have been interested in the individual-level conditions and dynamics through which actors may contribute to organizational change within organizations and organizational fields and use power. These are related to social position and social skills. Building on Bourdieu's (1990) conceptualization of fields, Battilana (2006, p. 656) suggests that the social position of individuals enables them to act as institutional entrepreneurs. She suggests that individuals' social position in the organizational field (organization status and social group status), individuals' position in their organization (informal position in organizational networks and formal position in the organizational hierarchy) and



changes in individuals' social positions (inter-organizational mobility and tenure in a position) determine their social position and their likelihood of acting as institutional entrepreneurs. Incumbents benefit from the existing institutional order and are more willing to maintain the status quo. Challengers, on the other hand, are more likely to change the existing order. (Battilana, 2006)

The social position of actors as professionals allows them to use their expertise in a specific activity and to either maintain or challenge the incumbent order (Daudigeos, 2013; Suddaby & Viale, 2011). Further mechanisms through which professionals use their expertise are controlling the information flows related to the activity (Daudigeos, 2013, p. 744) or constructing new rules and standards (Suddaby & Viale, 2011, p. 432). Because professionals control the information flows and rules, they have the legitimacy to use the power related to these. The ability of the actors to develop networks of connections inside and outside the organization also reinforces their status and power. (Daudigeos, 2013, p. 742; Suddaby & Viale, 2011, p. 428). Battilana (2006, p. 659) states that as individuals have different kinds of access to resources, they have the ability to contribute to institutional stability or to transform the field.

Suddaby, Viale and Gendron (2016, p. 243) suggest that in addition to social position, the social skills (Fligstein, 1997) of individuals affect their reflexivity – 'or the ability to see opportunity for change where others do not' – by contributing to institutional change or stability. Suddaby, Viale and Gendron (2016) draw from Fligstein's ideas and state that social skills enable some actors to better understand the social or institutional field in which they are embedded. In order to promote changes in the everyday practices inside an organization without formal authority, Daudigeos (2013, pp. 742–743) calls for the ability to use specific influence tactics and rhetorical strategies to persuade others. Socially skilled actors know the rules of the game and can act and negotiate in cooperation in a social field.

In the following, I discuss how the conceptions of agency, innovations and power relations are approached from the perspectives of ANT and MET.

## **2.2 Theories of material agency**

### **2.2.1 Emergence of agency**

The agency of things has been the focus of several studies in the broad, interdisciplinary research field of material agency. A thing can be anything that has materiality (Böschén et al., 2015, p. 260). The agency of material entities has been discussed in, for example, art and material culture studies (Appadurai, 1986; Gell, 1998; Layton, 2003; Rotenberg, 2014; Van Oyen, 2015), science and technology studies (Ashmore, Wooffitt & Harding, 1994; Callon, 1986; Latour, 1999, 2002, 2005; Law, 1992; Law & Mol, 1995; Pickering, 1993; Rose & Jones, 2005), cognitive archaeology (Knappett & Malafouris, 2008; Malafouris, 2013),

everyday work practices (Caronia & Mortari, 2015; Nicolini, 2009), organic nature (Jones & Cloke, 2008), and ritual ecology (McGraw & Krátký, 2017).

In this section I discuss how ANT and MET in particular approach agency. I examine the agency and power of things in social interaction, which both of these theories highlight.

Scholarly literature often claims that ANT is based on the symmetry of actors in heterogeneous networks. However, Latour (2005, p. 76) argues that in ANT symmetry means that there is no ‘asymmetry among human intentional action and a material world of causal relations’. Thus, in relation to agency, human and non-human actors are considered equivalent. Non-human actors include everything except symbolic and supernatural entities, humans and entities that are composed of humans and non-humans (Sayes, 2014, p. 136). Latour (2005, p. 71) suggests that ‘anything that does modify a state of affairs by making a difference is an actor – or, if it has no figuration yet, an actant’. If someone or something does not make a difference, they or it are not an actor. For example, hammers that hit nails on the head are actors as they participate in the action even though they do not determine it. Non-human actors do not do things instead of human actors, but ‘things might authorize, allow, afford, encourage, permit, suggest, influence, block, render possible or forbid’ (Latour, 2005, p. 72).

Latour (2005, p. 70) states that action cannot be limited to ‘what intentional, meaningful humans do’; neither can it be reduced to the ‘causal agency of technical objects’. Social action is ‘delegated to different types of actors which are able to transport the action further through other modes of action, other types of forces, altogether’. Delegation means that ‘someone makes another do things’. (Latour, 2005, p. 70-71). Action is thus always interaction. Law (1992, p. 381) maintains that interaction between people is almost always mediated through objects.

The notion of mediation and the distinction between intermediaries and mediators is central in the definition of an actor. According to Latour (2002, p. 250), intermediaries only fulfil a function, but mediators add something to the interaction. An example of the role of mediators that several scholars often refer to are traffic calming devices – speed bumps. These are signs that communicate a message to slow down but at the same time are moral agents that constrain the actions of humans to prevent traffic accidents. The idea of being-as-another prevents ‘mediators from being transformed into simple intermediaries’ (Latour, 2002, p. 256). Being-as-another means that ‘nothing is for itself or by itself, but always *by other things* and *for other things*’ (Latour, 2002, p. 256, italics in original). By this example, Latour shows how humans and non-humans affect each other and are transformed by each other.

The flat organizational landscape of ANT enables the examination of the horizontal connections between actors in actor networks (Latour, 2005). The idea that action emerges and is delegated in networks allows for the diversity of actors

(Callon, 1999, p. 194). Actors are understood as patterned networks of heterogeneous relations that participate in the social world (Law, 1992, p. 384). Agency is distributed and evolves in these relational networks of humans and non-humans such as animals, machines, texts, ideas, and technological innovations – any material things (Law, 1992, pp. 383–384; Latour, 2005). A network is not purely social or concrete; it consists of associations. Actors are associated in a network so that they ‘*make others do things*’ (italics in original) (Latour, 2005, p. 107). Hence, agency is considered symmetrical and relational. Law and Mol (1995, p. 277) speak of relational materialism. Humans and non-humans are parts of a network and only gain their identity through interactive relations within the network; they do not exist outside their interactions. Callon’s (1991, p. 141) description of a power station serves as an example. The station is a hybrid, composed of relations between turbines, operators, control boards and engineers. None of these pieces or materials exist by themselves.

ANT’s viewpoint of a flat landscape enables the examination of spatial and horizontal connections within networks. However, Engeström (1996, p. 262) states that this view does not pay enough attention to general social structures. According to CHAT, collective activity is realized through actions and operations. Recognition of the layered structure and the levels of operations, actions and activity, and entire networks of activity systems make the embeddedness of activity visible. Activity theorists examine collective activity as a durable activity system containing internal dynamics and historically accumulated contradictions.

Several scholars have criticized the statement that the agency between humans and non-humans is symmetrical. Kirchhoff (2009) states that humans make a special contribution to the relationship. Rose and Jones (2005, p. 28) argue that only humans are capable of reflecting on and interpreting their own actions and those of others. Only humans are intentional and direct their actions towards certain goals, and only humans are able to build networks. Kaptelinin and Nardi (2006) also stress the role of intentions, especially needs. Only humans ‘can develop their own intentions on the basis of their needs, and meet their needs by acting on other entities, both human and nonhuman’ (Kaptelinin & Nardi, 2006, p. 242). Hornborg (2017, pp. 98–99) points out that non-humans can have an impact on their environment by physically constraining human agency and acting as catalysts. They can be delegated functions and attributed agency, but their activity is not purposive agency, it is activity with consequences.

MET also considers that agency is not a property of either humans or non-humans. Gell (1998, p. 16) states that ‘an agent is the source, the origin, of causal events, independently of the state of the physical universe’. By arguing that an agent acts in relation to the object of their activity, Gell (1998) highlights the relational and context-dependent nature of agency. Malafouris (2013, p. 148) examines agency as a ‘relational and emergent product of material engagement’. As an example of material agency, he presents a potter at their wheel. The human

being, the materials and the environmental conditions are all interdependent and play a symmetrical agential role in the process. The potter does not solely control the process; the material and the conditions also play their role. Malafouris (2013, p. 148) stresses that agency emerges in the mutual engagement of the human and non-humans during this process. Ransom (2017) also emphasizes the processual nature of agency by arguing that all the things that participate in a certain process offer their own input to the process during their participation. Agency is not an internal operation of an entity; it emerges and evolves during the continuous engagement of the individual with the external world.

Pickering (1993) stresses the processual viewpoint of human and material agency. He introduces the idea of a dialectic of resistance and accommodation between human and material agency, which he calls ‘the mangle of practice’. Both agencies emerge in the real time of practice in the activity and transform each other. What distinguishes human agency from material agency, according to Pickering, is that humans can act intentionally. Only humans have the ability to orient towards future goals. (pp. 565–566).

A difference of opinions concerning intentionality seems to prevail. Several scholars (Kaptelinin & Nardi, 2006; Pickering, 1993; Rose & Jones, 2005) argue that intentionality is a human property. Malafouris (2013) tries to tackle this problem by differentiating between two types of intentionality, prior intention and intention-in-action. Prior intention is an internal state of the mind that is formed before the action and does not necessarily have any effect on the world. Intention-in-action refers to an activity in which no intention has been formed before the action. Intention-in-action is part of the action and does not precede it. Malafouris (2013, p. 140) argues that if intentionality and agency are associated, intention cannot precede action; ‘it is in the action’. Intention-in-action is not an internal property and thus ‘cannot be used as the criterion for the attribution of agency to humans’ (Malafouris 2013, p. 144). Intentionality is not a subjective experience but a distributed and interactive phenomenon.

Malafouris (2013) suggests that instead of asking *what* agency is, it would be more relevant to examine *how* agency emerges, manifests and transforms. ‘The important question is not “What is agency?”... The important question is, rather, “When and how is agency constituted and manifest in the world?”’ (p. 147). I agree with Malafouris and maintain that it is most relevant to examine how agency emerges and evolves. Thus, in my study I focused on the emergence and evolution of transformative agency during a particular CL intervention. I am interested in how transformative agency manifests itself in discourse and action and how it evolves in collective activity.

### 2.2.2 Innovations

As innovation and power relations have not been the main focus of MET, I discuss these conceptions from the viewpoint of ANT. ANT has recently examined the agency of actors and networks, but in the 1990s the research focus of ethnographic studies was more on innovation and power. Innovation studies in ANT have examined large, long-lasting technological projects (Law & Callon, 1992; Latour, 1996). The success of projects and innovations has been dependent on three interrelated factors: the creation of two networks and the exchange of intermediaries between these networks. First, the project builders have to build and maintain a global network, which is a set of relations between the actor and the neighbouring activities as well as between these neighbours. The global network provides the innovation project with space, resources and autonomy for a certain period of time. Second, the project builders must build a local network, the project itself, in which the experimentation and innovation of new ideas and devices occur. This local network is also called a negotiation space. In this space the builders – the project management – offer material, economic or other expected returns to the actors in the global network. Third, the ability of the project management to position itself as an obligatory point of passage between the two networks is critical. From this position they can control the resources provided by the global network and profit from the success achieved in the local network. (Law & Callon, 1992, p. 46)

In ANT, the network building activity is considered crucial for initiating and implementing innovations. Network building takes place in global and local networks simultaneously. It confronts political, bureaucratic, economic, and technological struggles. The project management has to create tactics and scenarios to solve problems and mobilize allies. Thus, to understand innovation and the way in which artefacts are created, it is important to understand the heterogeneity of sociotechnical systems. (Law, 1988, pp. 66–67)

Several scholars argue that the analysis of innovations from the perspective of ANT faces problematic methodological questions related to the generalized symmetry between humans and non-humans. First, the selection of relevant actors (Miettinen, 1999, p. 181) and drawing the boundaries of a network (Malafouris, 2013, p. 127) is challenging, as the number of actors in innovation networks can be unlimited and impossible to define beforehand. Van der Leeuw (2008, p. 242) argues that invention takes place locally and thus involves a limited number of agents, but that innovation is a more widespread process requiring a large network of agents. Second, innovation studies generally select the loudest human beings as actors and hence, the contribution of the more silent non-humans is marginalized (Miettinen, 1999, p. 182). Third, it is difficult to detect the starting point and the emergence of an innovation in a network that comprises a chain of associations. As Malafouris (2013, p. 128) states ‘intentionality, and agency are not properties of the isolated person or the isolated thing: they are properties of a

chain of associations'. Hernes (2005, p. 116) also emphasizes the processual viewpoint of ANT. The focus of analysis is not on causal relations that have a beginning and an end but on possible contingencies, effects and results in networks. Fourth, Miettinen (1999, p. 182) stresses that ANT ignores human capability to initiate, learn and organize the innovation process. These processes cannot be delegated to non-humans. Despite the criticism, the significance of a network in initiating and implementing innovations has gained interest and importance in recent innovation studies (e.g. Lehenkari, 2006).

### **2.2.3 Power relations**

The approach to power in ANT and IT differs from the traditional sociological viewpoint of power relationships. Latour (1986) adopts the position of Foucault and states that power is not something that someone possesses but something that is exercised through practices thus making it an effect of an activity. According to Latour (1986, p. 265), power is 'a composition made by many people – and attributed to one of them'. Hence, power varies according to the number of actors entering the composition and committing themselves to making efforts for joint activity. Power is a consequence of a collective action. Law (1986, p. 5) also maintains that ANT sees power as an effect rather than a cause of the construction of an actor network. Central conceptions for understanding this approach are translation and the obligatory point of passage.

According to Callon (1986, pp. 223–224), translation is a process that emphasizes continuous and unpredictable displacements, transformations, representations, and negotiations. It is a process through which an actor aims to influence others to agree with problem definitions and to accept the solutions suggested by him- or herself. Displacements and transformations are processes of organizing and reorganizing, forming and reforming, which occur between different actors, humans and non-humans, goals and interests, and places. Representation and negotiation refer to the ability of one actor to establish themselves as a spokesperson who expresses what the others want and need and to negotiate with allies. Negotiations are acts of reassurance, persuasion, calculations, and force. Translation means that an actor within a network leads the allies to pass an obligatory point of passage.

Law (1986, p. 8) states that the notion of the obligatory point of passage that is critical for the success of innovations is also crucial from the perspective of power. When an actor is able to develop different strategies to enrol others into a network, transform their interests, and force them to move through a particular passage, i.e. participation in the network, they can impose themselves upon the others and act as a spokesperson for them. ANT ethnographic studies that have focused on technological innovations have examined the methods with which actors try to open up certain possibilities and close down others. Technological

innovations are games of power. Power arises from the ability of actors to weave networks of allies.

Callon (1986, p. 224) highlights that displacements and spokespersons can be challenged and resisted. New displacements take place, obligatory points of passage change, and spokespersons are replaced. Translation is thus a process that leads to a situation in which a few actors control other actors. Peltonen and Tikkanen (2005, p. 276) also stress that according to ANT ‘power is a network type of mechanism, which is not fully controlled by anyone and which is constantly extended, edited, challenged and modified’.

In ANT, the conception of power stresses competition and rivalry. Latour cites the Prince of Machiavelli and his merciless tactics and strategies to achieve certain goals and maintain power. The Prince of today according to Latour (1988, p. 25) can be an individual but also an assembly, a techno-structure, a nation, or a collective. The Prince has to gain dominance and engage human as well as non-human allies to achieve his goals. The allies can be unreliable and may strive for their own interests and for the Prince to gain power, they have to be kept in line. Thus, there is a continuous struggle and fight against others, the enemies who strive to replace the Prince.

Next, I discuss CHAT, a theory that examines human activity in historically formed activity systems. It approaches agency, innovations and power relations from the viewpoint of change, transformation and learning.

## **2.3 Transformative agency within cultural-historical activity theory**

### **2.3.1 Emergence of transformative agency**

Within the activity-theoretical framework, agency is considered embedded in historically evolved object-oriented activity systems. An organization consists of several interrelated activity systems. In CHAT, the concept of the activity system is theoretically and methodologically central. Thus, I present this concept briefly in this section and refer to it several times in this summary, and return to it in more detail in Section 3.3, in which I describe the research site and the activity system of Solution Services. Engeström (1987, p. 78) has depicted a general model for an activity system, which serves as a tool to present the activity of individuals and teams. The general model is illustrated in Figure 1. The upper part of the triangle depicts the object-oriented actions carried out by a subject, an individual or a group of people, which are mediated by instruments, tools and signs. The actions carried out by individuals are embedded in collective activity, which is illustrated in the lower part of the triangle: the community, rules and division of labour. Engeström (2007) states that the elements of the system are intertwined and affect

each other. When one element changes or develops, it causes dilemmas and contradictions in and between the other elements.

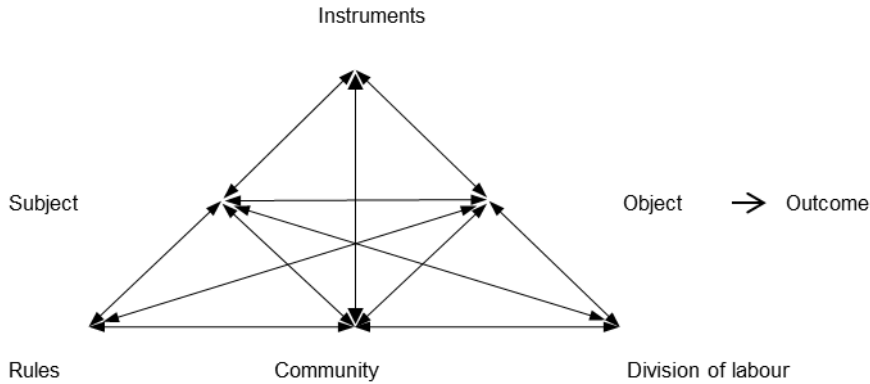


Figure 1. General model of the activity system (Engeström, 1987, p. 78)

CHAT considers agency to be potentially transformative. Transformative agency examines the dilemmas, conflicts and contradictions developed in and between activity systems. It aims to develop and change existing ways of action and circumstances. Virkkunen (2006a, p. 49) defines an individual's transformative agency as 'breaking away from a given frame of action and taking the initiatives to transform it'. The transformative agency of individuals has been examined in, for example, educational environments (Rainio, 2010) and the homecare of elderly people (Nummijoki & Engeström, 2010). In work organizations, the subject is most often a group of people. Shared transformative agency means that a group of people collaboratively develops the activity (Virkkunen, 2006a, p. 49).

Engeström (2007) considers transformative agency a characteristic of human beings. However, it is not a stable property among individuals, but a dynamic long-lasting process of learning and developing, which evolves through social and material interaction. It is initiated by individual human beings but requires collaboration to evolve in collective activity. As transformative agency is collectively produced and maintained, it is considered a property of groups. Citing Engeström and Sannino (2013), Engeström, Sannino and Virkkunen (2014, p. 124) argue that 'Transformative agency also goes beyond situational here-and-now actions as it emerges and evolves over time, often through complex debates and stepwise crystallizations of a vision to be implemented'.

Engeström's (1987) theory of expansive learning suggests that learning is a collective, long-term process. In expansive learning it is typical for a group of people to learn something new that does not yet necessarily exist (Sannino, Engeström & Lemos, 2016, p. 603). Thus, expansive learning or expansive change means that the object of activity or the activity system expands to, for example, new products or services and new clients. Transformative agency is directed



towards developing the existing practices and structure of an activity system. Hence, transformative agentive actions can be expansive and radical. However, the particular steps taken may be incremental and have a more reformist nature, despite the end result being expansive. Thus, a single action is not always decisive from this point of view, as the expansive potential is manifested at the level of activity, in a chain of actions.

Transformative agency manifests itself in discourse and actions. Recent CL interventions and activity theoretical studies have identified six types of expressions of transformative agency (Engeström, 2011; Haapasaari, Engeström & Kerosuo, 2016; Sannino, 2008; Vänninen, Pereira Querol & Engeström, 2015) that are characteristic of practitioners and visible in varying numbers throughout the CL intervention process:

- Resisting change, new suggestions or initiatives.
- Criticizing current activity, identifying problems, and highlighting the need for change.
- Explicating new possibilities or potentials in the activity, often by relating to past positive experiences or former well-tried practices.
- Envisioning new patterns or models for the activity.
- Committing to take concrete, new actions to change the activity. Commissive speech acts are tied to a specific time and place.
- Taking, or reporting having taken, consequential actions to change the activity.

These types of expressions of transformative agency seldom appear independently. They are often taken up and collectively developed in discussions and collaboration between practitioners and researcher-interventionists. The overall picture of the analyses of expressions of transformative agency has revealed a developmental movement from resisting and criticizing, to explicating and envisioning, and further to committing and taking actions towards the end of the CL. However, the production of expressions of transformative agency is not a linear process; it may contain jumps in frequency during the intervention. (Engeström, 2011; Haapasaari, Engeström & Kerosuo, 2016; Sannino, 2008; Vänninen, Pereira Querol & Engeström, 2015)

The CL intervention method is based on two epistemological principles, the principle of double stimulation (Vygotsky, 1978; 1997a) and the principle of ascending from the abstract to the concrete (Davydov, 1984). In the emergence and formation of transformative agency, the principle of double stimulation plays central role. I will discuss this principle, as it proved to be key in the empirical analyses of my research. The other principle was not the focus of my analyses.

Double stimulation is a foundational notion in Vygotsky's (1997a) research and 'conceptualisation of human beings' ability to agentively transform the

circumstances in which they find themselves' (Sannino & Laitinen, 2015, p. 4). Engeström (2011) states that when a person faces a problematic situation, they try to break out of it. The problematic situation functions as the first stimulus in the double stimulation setting. The person can use external artefacts or signs as second stimuli by filling them with significant meaning and trying to break out of and transform the circumstances. However, the resolution may require the creation of artefacts and tools that are beyond the capabilities of the person at that time.

Sannino (2011; 2015) has reconstructed the ideas of Vygotsky and defines double stimulation as a principle, 'the mechanism with which human beings can intentionally break out of a conflicting situation and change their circumstances or solve difficult problems' (Sannino, 2011, p. 584). 'The principle of double stimulation shows how an individual can gain the power to use outside resources to determine his or her own behaviour. This principle is presented as a key factor in the human ability to transform at the same time the world around and him- or herself' (Sannino, 2011, p. 585).

Sannino (2015, pp. 9–11) depicts the principle of double stimulation as including two apparatuses that are relatively independent of each other. These apparatuses describe how volitional action, or will, emerges. Apparatus 1 is a decision-forming apparatus and Apparatus 2 is a decision-implementing apparatus. See Figure 2.

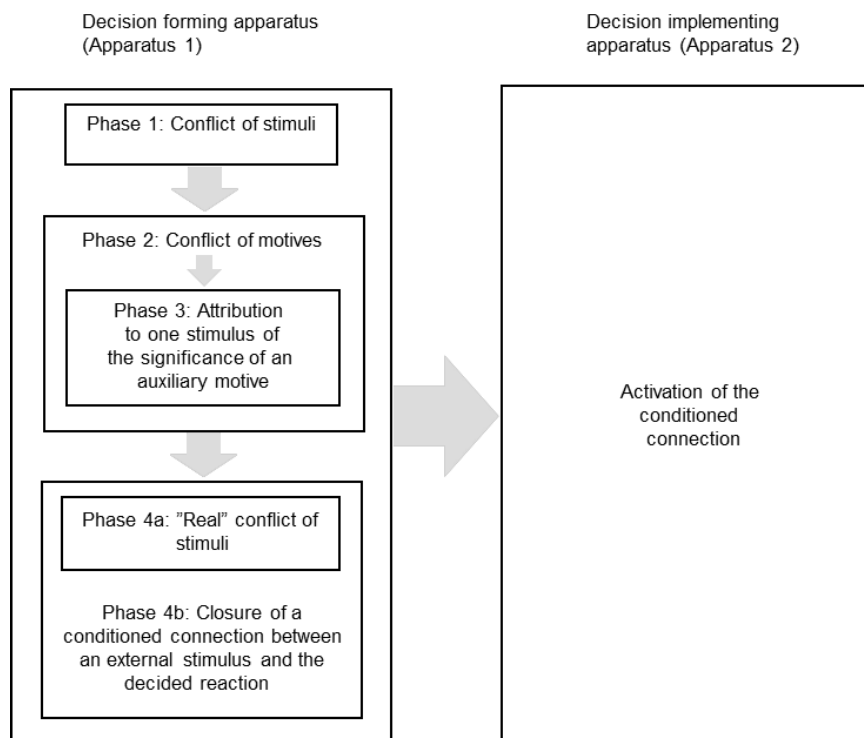


Figure 2. Model of double stimulation (Sannino, 2015, p. 10)

Apparatus 1 involves the following four phases: 1) Conflict of stimuli; 2) Conflict of motives; 3) Conversion of one stimulus into an auxiliary motive; and 4) Closure. In Phase 1, a clash between stimuli leads to a conflict of stimuli. In Phase 2 this conflict activates motives and turns the conflict of stimuli into a conflict of motives (first stimulus). Conflicts of motives are tensions and struggles between opposite motives. When a group of people face a problematic or conflicting situation, the resolution requires personal experience of a conflict of motives and that the people see the situation through ‘the perspective of personal sense’. (Sannino, 2008). Engeström, Kajamaa and Nummijoki (2015, p. 49) maintain that the conflict of motives typically appears ‘as external tension between the intentions and aspirations of actors’.

In their studies of waiting experiments in meaningless situations, Sannino (2016) and Sannino and Laitinen (2015) show how in Phase 1, a participant is confronted with conflicting stimuli. They are asked to wait for ‘no purpose in an empty room’ (Vygotsky, 1997a, p. 212). The two stimuli bring about a conflict of motives in Phase 2: whether to wait or leave the room.

Sannino (2015, p. 10) stresses that Phase 3 is the most important phase in decision-forming Apparatus 1. ‘The phase involves the change in the functional role of a stimulus and its conversion into an auxiliary motive’ (Sannino, 2015, p. 10). In this phase

‘The person, using the power of things or stimuli, controls his own behaviour through them, grouping them, putting them together, sorting them ... makes them serve his own purposes ... He changes the environment with his external activity and in this way affects his own behaviour, subjecting it to his own authority’ (Vygotsky, 1997a, p. 212).

In the example of the waiting experiment, the participant aims to resolve the situation by selecting a neutral auxiliary stimulus, for example, a clock. The participant decides that when the clock shows a certain time they will react and leave the room (Sannino, 2015).

In Phase 4 ‘the closure of a conditioned connection between a concretely occurring external and unmediated stimulus and the decided reaction’ takes place (Sannino, 2015, p. 11). Phase 4a is critical, because the real conflict of stimuli happens in this phase. Phase 4b is the ‘actual closure of the connection between the given stimulus and the reaction’ (Vygotsky, 1997a, p. 215). In this phase, the participant actually makes the decision to leave. After the closure, the instruction is followed as in Apparatus 2, the decision-implementing apparatus (Sannino, 2015, p. 11).

According to Engeström (2011, p. 621), it is characteristic of an effective second stimulus that it is actively constructed by the subject themselves. It can be a relatively general artefact, but it is gradually developed by the person according

to their needs. Even though the second stimulus can be modified, it retains a 'material representation'. What is most important is that the person actively uses the second stimulus to solve the problems and contradictions caused by the first stimulus. The construction of the second stimulus can be a lengthy and demanding process.

Engeström (2011, p. 612) states that formative interventions regard the mechanism of double stimulation as a basis for transformative agency. In the CL sessions, the researcher-interventionist cultivates the participants' reflections and analysis of the current situation by presenting examples of problems and disturbances in the practitioners' activity. These first stimuli can be in the form of video-recorded material or excerpts from interviews with representatives from the community or clients. The first stimulus functions as mirror material for the participants. To solve the problems, the researcher-interventionist provides the participants with general models from the CL toolkit. For example, the general model of an activity system and a model of expansive learning cycle are conceptual tools; neutral secondary stimuli that the participants can use.

### **2.3.2 Innovations**

Blackler, Crump and McDonald (1999, p. 8) emphasize that one of the fundamental ideas of CHAT that distinguishes it from other approaches to innovation and change is that 'activity systems produce disturbances'. It is specifically the inconsistencies, tensions and disturbances in and between activity systems that motivate people to initiate and innovate new ideas and solutions and provide possibilities for collective development (Blackler, Crump & McDonald, 1999). According to Engeström (2011, p. 609), innovations arise from disturbances, conflicts and contradictions in an activity. Contradictions are 'historically accumulating structural tensions within and between activity systems', which manifest themselves in disturbances and conflicts in day-to-day activity. Innovations, as well as transformative agency, are initiated when the existing norms and ways of acting are questioned. As part of an activity system, an individual or a group of people have the interest and motive to initiate and take actions to develop and change the elements of the activity system.

Thus, activity systems form the locus in which innovation activity, collaboration and learning take place (Miettinen, 1999, p. 183). They not only inspire motivation to participate but enable participation by offering means for innovative development work (Engeström, 2001, p. 136). Activity systems arise and develop over a long period of time. Hence, CHAT pays special attention to the historical development of the system. To understand the current situation with its problems and to envision future possibilities, the local history of the activity and the object, the history of the theoretical ideas behind the activity need to be examined. (Engeström, 2001, p. 136)

CHAT also stresses the multi-voicedness of activity systems. According to Engeström (2001, p. 136), ‘an activity system is always a community of multiple points of view, traditions and interests’. The participants of an activity system have their own history and experiences, which they share in the community. The development path and interests of the activity are visible in the object, artefacts and rules. This multi-voicedness is multiplied when neighbouring activity systems and networks participate in the activity. The richness of multiple points of view and voices is both ‘a source of trouble and a source of innovation’ (Engeström, 2001, p. 136). In CL interventions, the participation of different interest groups representing different local levels and dimensions of the system is considered crucial.

Engeström (1995, p. 330–331) has examined innovative organizational learning and identified three different types of innovations that can be anchored in the activity system: solution, process and systems innovation. Solution innovation is a novel solution to a problem and is typically limited to one element of the activity system. It can be a new mediating artefact, a new rule or a new way of dividing work in the organization. Process innovations focus on the object of the activity. They are efforts to reorganize or optimize the process of the object from raw material to the finished outcome. Systems innovations question and reorganize the principles of the activity system in the past, present and future. The production of systems innovations requires the actors to shift their focus from separate components of the activity system and to examine the elements of their activity as an interconnected system.

Mainstream innovation research can and has examined innovations as closed categories, products, services, or procedures that challenge former practices and enhance the activity (see e.g. Lee, Swink & Pandjepong, 2011; Tidd & Hull, 2006). However, innovations can also be open and continuous processes that engage the initiators and participants in a dialogue. According to Von Hippel and Tyre (1995, p. 12), ‘innovation may best be seen as a continuous process, with particular product embodiments simply being arbitrary points along the way’. Van de Ven (2017, p. 40) also stresses that innovation is a journey consisting of ‘a nonlinear cycle of divergent and convergent activities that may repeat in unpredictable ways over time’. According to Van de Ven this means that managers in organizations cannot control or be responsible for the processes of initiative development and implementation. Within CHAT innovations have also been examined from the process perspective and understood as continuous activity. Innovation is a social process that involves actors from one or several activity systems who are interested in and motivated to develop the activity (e.g. Lehenkari, 2006).

Several studies have applied activity-theoretical concepts in their analyses of initiatives and innovations (Hasu, 2001; Hyysalo, 2004; Lehenkari, 2006; Miettinen, 1999; Teräs, 2007). Teräs (2007) maintains that a simple suggestion

can start an innovative process during which the suggestion is collaboratively elaborated. Lehenkari (2006) has found severe contradictions in activity systems to be the source of innovation. Based on their research, Hasu et al. (2014) suggest that interventions that enhance frontline employees' participation in innovation processes and methods of evaluation of these processes should be fostered.

The aim of a CL process is to support the innovativeness of the participants and to produce new ideas and invent new tools, organizational forms and ways of working (Virkkunen & Newnham, 2013). According to Virkkunen and Newnham (2013), the idea of a CL intervention is not to implement a predetermined objective or solve only daily problems, but to develop the activity. Thus, initiatives and new ideas are an expected outcome of the CL process. Initiatives may arise from past positive experiences and well-tried practices and be further developed in the CL. However, initiatives can also be totally new ideas for new patterns or models in the activity.

### **2.3.3 Power relations**

Transformative agency, the ability to break out of a current challenging situation and initiate and implement changes in an activity is closely related to the concept of power. However, this concept has not been CHAT's main focus. As Engeström (2009) states, this may be due to difficulties in analysing hierarchical power relations in one activity system. Traditionally, in organizations, power is manifested in the discipline and control of resources that are administered by the management. Activity theory sees managing as an independent activity system, apart from the activity system of subordinates (p. 307).

Power is a multifaceted conception that is associated with different manifestations and is approached from different theoretical lights (e.g., Hardy & Clegg, 1996). An interesting framework that includes different forms and sources of power from the viewpoint of CHAT, presented by Hardy (1996) and Hardy and Clegg (1996), is the system of power relations. This system comprises power and resistance. Referring to Lukes' (1974) layered conception of power, Hardy (1996, pp. S6–S8) presents three dimensions of power based on resources, processes and meanings. Resource power represents a coercive form of power, 'power over' others or things. Who or which instances control resources have the power to decide. Power can be legitimate, embedded in organizational hierarchy; or illegitimate, from outside the formal hierarchical structures. Process and meaning power are enabling forms of power; the 'power to' do things. Organizational decision-making processes reveal who is included in the process and which issues are placed on the agenda. Managing shared meanings and perceptions is a mechanism for deciding what is legitimate and thus determining outcomes. The 'power to' is important in the innovation process and the production of initiatives. Furthermore, organizational actors can use discretion, which enables possibilities

to resist. Power relations are always a two-way phenomenon, and different forms of power and resistance may be found in the same social situations (Hardy, 1996; Hardy and Clegg, 1996). Typically, resistance has been considered a one-way phenomenon that manifests itself in bottom-up relations in organizational change efforts. However, it can also be exercised from the top down.

The management literature has approached power as a medium for gaining and maintaining a position to control others. According to Blackler (2011, p. 733) and Blackler and McDonald (2000, p. 835), power is not only a medium of collective activity but also an ongoing product of the activity. From the CHAT viewpoint, power emerges from the activity of practitioners. When people realize that they can influence joint issues and processes, they create new power. When they experience a change as meaningful and as enhancing the activity in, for example, practices or tools, they commit to advancing its implementation and sustainability (Kajamaa, 2011, p. 146). Hence, power is situated not only in existing structures but also in collective activity. Power is an outcome of collective activity, which aims to influence joint activity and accomplish a change.

CHAT acknowledges the various existing conceptions of power but is particularly interested in the creation of new power from the bottom up and how actors are activated and involved in work development. This approach emphasizes the transformative agency of actors. The 'power to' do things and influence joint issues can be maintained by supporting the transformative agency of the actors. At the core of transformative agency is the practitioners' power to act or not act. Transformative agency detects problems, dilemmas and disturbances, and strives to reorganize the activity by envisioning new models and taking actions to change the activity. It can also express resistance by taking the reins and using discretion. Thus, transformative agency opens up new possibilities and supports the emergence of new power.

Regarding this study, the emphasis of social skills in IT for maintaining and promoting power is interesting. Recent CHAT studies have examined the speaking turns of the participants of a CL intervention and how power and resistance are expressed and used in discourse (Engeström, 2011; Haapasaari, Engeström & Kerosuo, 2016; Sannino, 2008; Vänninen, Pereira Querol & Engeström, 2015). According to CHAT, transformative agency is not a property of individuals but is initiated by an individual. Thus, the role of social skills in power relations examined in IT could be a field worth examining in future CHAT research. The social position of an individual as a professional in a work unit and in relation to colleagues in a network and to management plays a role in how they are heard and in the influence of the expressed ideas. Furthermore, the ability to use power to enhance or resist initiatives without formal authority in a work community requires social skills.

Edwards (2005; 2009) has examined the relations of individual experts in social interaction. The concept of relational agency introduced by Edwards (2009,

p. 203) defines agency as ‘a capacity to align one’s thought and actions with those of others in order to interpret problems of practice and to respond to those interpretations’. However, as Engeström (2007) states, transformative agency goes beyond the relations of individuals to collective actions to accomplish change and use power from the bottom up.

## **2.4 Synthesis and prioritization of theoretical approaches**

In this section I summarize the viewpoints of the four theoretical approaches discussed in this chapter and present the arguments for the theoretical focus and prioritization

The basic theoretical unit of analysis in CHAT is the activity system of actors. This describes the structure of activity and how it evolves through the actions of people. The system has its own historical development and local features. In contrast, in IT the focus of analysis is on the activities of actors and institutions. This viewpoint examines the interrelatedness of actors and institutions but may overshadow the local day-to-day activity of the actors.

IT and CHAT share a common interest in the activity of individual and collective actors and in the ways in which they develop their joint practices. According to IT, the agency of actors requires collective reflection when aiming to create or disrupt, but also when maintaining institutions on the field level and changing day-to-day practices inside organizations. CHAT in turn strongly emphasizes the transformative dimension of agency, which emerges in situations of conflicting stimuli in local activity. CHAT considers transformative agency to be embedded in the examination of disturbances and conflicts and the development of collective object-oriented activity. Both theories consider intentionality and purposiveness to be crucial in the formation of agency. Furthermore, the temporal dimension is visible in both theories. Institutional work examines past practices and orients towards maintaining current or disrupting old everyday practices and social structures. It also aims to develop and create new habits and rules, to turn new practices into institutions. Transformative agency in CHAT comprehensively examines the historical development, the present situation and the future of an activity, and aims to transform current practices in local activity.

The analysis in ANT and MET focuses on networks or the mutual engagement of humans and non-humans. For ANT and MET theorists, agency is not related to human beings’ internal processes of intention and will; it emerges in the mutual engagement of humans and non-humans in networks of multiple configurations and in the material world. Intentionality is distributed in this interactive process. Humans, non-humans and the environment are interconnected and play a symmetrical role in the process of agency. Agency is thus considered distributed, relational and context dependent. The definition of an actor inherently includes a



change, as an actor is a human or non-human being that makes a difference to the prevailing situation.

Like ANT and MET theorists, CHAT theorists also highlight the relationship between human beings and cultural means. According to CHAT, the materiality of human activity and practices is visible in the object of activity and the mediating artefacts and tools used in the activity. Miettinen (1999) states that ANT, MET and CHAT all share a common perspective in highlighting the significance of material artefacts. The theories point out that human activity is always mediated through artefacts.

In innovations research, the focus of IT has been on the establishment of innovations rather than on the emergence of novel ideas. Innovations can be incremental steps in day-to-day practices and routines, or radical changes that have to win legitimacy and overcome political struggles. In contrast, the focus of innovations research in ANT is never purely on the innovative product itself but on the actor network. The ANT approach highlights the building and maintenance of networks that promote durable associations, allow for action and create opportunities to initiate and implement innovations. Responsibility lies with the individual spokesperson or is shared within project management and its ability to persuade, negotiate and weave a network that supports the implementation of innovations.

Activity theorists are especially interested in the emergence and evolution of initiatives. CHAT enables actors with theoretical and methodological concepts and tools to collectively analyse work activities. The tensions between the elements of an activity system, and hence the problems and disturbances faced by the practitioners, generate raw material to be worked on and refined as innovative ideas. As a result, new products or services are developed. CHAT and IT share the view that innovations can be incremental and stepwise proceeding improvements in practices. Thus, CHAT has examined innovations not only as new products and services, but also from a process perspective, as continuous activity supported by the actors' transformative agency.

IT and ANT consider power to be a relational phenomenon rather than a property of actors. IT emphasizes the interplay between institutions and actors. Institutional control is associated with systemic power, which is visible in the use of discipline and domination. The actors in turn exercise episodic power, which is found in the ability to influence and force. Furthermore, the position in the existing structures of an organization and in the organizational field, as well as the use of effective tactics and strategies in negotiations, enable socially skilled actors to exercise power. In ANT, power is also related to persuasion and negotiation. The capability of actors to mobilize relevant actors and mediators, to construct a network, and further to position themselves as an obligatory point of passage that controls interaction in the network, are crucial from the perspective of power.

Power relations, especially coercive forms of power, have not been the main focus of CHAT. Activity theory in turn is particularly interested in the creation of new power and how actors are activated and involved in work development. Changes and transformations in an organization offer opportunities for the emergence of transformative agency among actors. Transformative agency accepts the challenge and opens up new possibilities. Hence, it supports the emergence of new power and questions institutionalized power structures.

Table 1 shows the relevant viewpoints of the four theoretical approaches.

Table 1. Synthesis of the theoretical approaches used in summary

	<b>IT</b>	<b>ANT and MET</b>	<b>CHAT</b>
Emergence of agency	Agency emerges in a process of collective reflection in local activity	Agency emerges in a process of interaction between humans and non-humans, in which intention is embedded	Transformative agency emerges in a situation of conflicting stimuli in local activity
Transformative agency	Individual and collective human beings intentionally aim to create, maintain and disrupt institutions and social practices	Human and non-human beings interact in relational networks (ANT) or in a process of material engagement (MET)	Individual and collective human beings of a joint activity intentionally aim to transform their object-oriented activity
Innovations	Innovations can be incremental or radical embodiments of a product or service	Initiation and implementation of innovations requires building actor networks (ANT)	Innovations arise from contradictions in an activity system and can be new products or services but can also be understood as continuous activity
Power relations	Systemic and episodic power, social skills and social position in the existing structures impact on the ability to act, influence and use power	Power is an effect of various strategies to enrol allies into a network and is utilized by a Prince (ANT)	Transformative agency opens up new possibilities and supports the emergence of new power

I am especially interested in the emergence of transformative agency and how it can be nurtured and supported in collective activity in organizations. I stress the CHAT framework in my study because it provides useful theoretical models and methodological tools for examining the emergence of transformative agency and employee-driven innovations. First, the principle of double stimulation reveals the mechanism with which actors aim to break out of a conflicting situation and transform current activity. Second, the activity system model supports the perception of the current situation and the problems and tensions that result in historically accumulated contradictions. These contradictions in turn are the

source of innovations. Third, successful change efforts in organizations require the involvement of all parties. When people are provided with tools, forums and time, they are empowered to impact on joint activity. Thus, the transformative agency of actors supports the emergence of new power. Although the theoretical focus of this study is on CHAT, I utilize the theoretical approaches of IT, ANT and MET in my theoretical discussions and return to them in the conclusions of this summary.

### 3 METHODOLOGICAL FRAMEWORK

The methodological framework of this study builds on CHAT and especially on the methodology of formative interventions. CHAT offers useful theoretical and methodological concepts and tools for examining the transformative agency of actors in local organizational settings and change efforts. The theoretical and empirical parts of this study are tightly interrelated. The empirical data are from a CL intervention and the data analyses combine the classification methods and analytical tools developed in CHAT and organizational studies.

In the following sections, I describe the method of the CL interventions on which the intervention of this study is based. Then, I describe the research site and present the data, the methods of data collection and data analysis. To conclude this chapter, I elaborate on the questions of sustainability, the generativity of qualitative research and my position as a researcher-interventionist.

#### 3.1 Formative interventions and the Change Laboratory method

The methodology of formative interventions is based on the research and experiments conducted by Russian scholars Vygotsky (e.g., 1978, 1997b), Leont'ev (e.g., 1978, 1981), Il'enkov (e.g., 1977), Davydov (e.g., 1990), and their colleagues. It has been further developed by Professor Engeström and his colleagues in the Center for Research on Activity, Development, and Learning (Cradle) at the University of Helsinki. Cultural-historical psychology (Vygotsky) and activity theory (Leont'ev) create a strong theoretical foundation for formative intervention research (Engeström).

According to Engeström (2011, p. 606), formative interventions differ from design-based studies, as they are open ended and have a developmental character. A formative intervention is not a linearly progressing project with a great design and predetermined objectives. Neither is it only a process that facilitates participation. A formative intervention builds its strength on three methodological principles. The first principle is the principle of double stimulation. The second is the principle of ascending from the abstract to the concrete (Sannino, 2011, p. 586). These two principles culminate in the third principle, the principle of transformative agency (Engeström, Sannino & Virkkunen, 2014, pp. 124–125).

The participants of a formative intervention typically face a contradictory situation in their activity. They are often in a 'need state'. Becoming aware of the need for change and the desire for something that possibly still cannot be clearly expressed is necessary in order to understand and analyse the activity (Engeström, Kajamaa & Nummijoki, 2015). Engeström (2011) states that at the beginning of

the intervention, the participants analyse the situation together with a researcher-interventionist. The first stimulus in the double stimulation setting is the problem or the dilemma itself. The researcher-interventionist provides the participants with neutral auxiliary stimuli (the second stimulus in the double stimulation setting) with the help of which, during the course of the intervention, the participants experiment and try to solve problems and develop solutions or possibly a new concept to break out of the conflicting situation.

The principle of ascending from the abstract to the concrete reveals the dialectic movement of thinking from concrete issues, through abstraction, back to concrete. The principle is followed in the process of a formative intervention when it proceeds by certain methodological steps. During the intervention process, the participants are involved in the planning and realization of the contents and the course of the intervention. The intervention nurtures the transformative agency of the participants and they can even take over the process and produce deviations from the interventionist's initial script. (Engeström, Rantavuori & Kerosuo, 2013; Engeström, Sannino & Virkkunen, 2014)

In a formative intervention, engaging the participants in problem-solving and the development of work is essential. The participants' personal motive to develop the activity is an important first step in the emergence of their transformative agency (Virkkunen & Newnham, 2013). The researcher-interventionist's role is not only to act as a facilitator, as in design-based studies, but to support the emergence of the participants' transformative agency and the sustainability of the development process and solutions invented and implemented (Engeström, 2011).

The methodology of formative interventions is concretized in the CL method. Since its creation in the mid-1990s, CL has been used in various intervention studies, ranging from work organizations such as post offices (e.g., Pihlaja, 2005), hospitals (e.g. Kerosuo, 2006; Kerosuo, Kajamaa & Engeström, 2010; Saaren-Seppälä, 2004), factories (e.g., Virkkunen, 2006b), schools (e.g., Englund, 2018; Moffitt, 2019; Sannino, 2010), and newsrooms (e.g., Hasu, 2001), to communities (e.g., Jalasi, 2020; Lotz-Sisitka et al., 2017; Mukute et al., 2018; Vänninen, Pereira Querol & Engeström, 2015) in several different countries all over the world.

The CL is a well-planned, compact way of conducting an intervention. It consists of six to ten sessions and a follow-up period during which the implementation of the planned changes is followed.

The CL intervention process starts by gathering ethnographic data from the activity of the unit in which the intervention is carried out. The data may consist of interviews of the participants, management representatives or members of neighbouring activities; photos; video-clips; analyses of different kinds of documents and tools; and observations of problematic situations and practices in the activity. First, the researcher-interventionist gathers data to orientate themselves towards the activity and to obtain a picture of the problematic issues in the work activity. Second, the researcher-interventionist gathers data that can

be used as mirror material in the CL sessions. The researcher-interventionist and the participants also collect ethnographic data during the intervention process. All this data are called mirror material and can be used as first stimuli in the discussions of the sessions to focus the participants' attention onto the object of their joint activity. (Engeström, 2011; Virkkunen, 2006a)

The CL sessions are closely linked to day-to-day activity. This is visible in the organization of the sessions, which are held in a separate space or room close to the activity. The central tools in the space are three boards on the wall. The first board is a 'mirror', on which the problems and challenges faced at work are described (mirror material). On the second board, someone selected from the group of participants writes down the ideas and tools that are presented as solutions to the problems. The third board presents the activity of the participants using the theoretical models and tools developed through CHAT. All the boards also contain a temporal dimension from the past to the present and the future. During the analysis, the participants move between the boards and the past, present and future. They analyse the historical origins of the problems manifested in the present way of working and envision future models and possibilities for the activity. (Engeström, 2011; Engeström et al., 1996)

The researcher-interventionist plays an essential role in facilitating and enhancing multi-voiced discussion in these sessions (Virkkunen, 2006a, p. 52). They provide the participants with tools from the CL toolkit which help them understand the greater picture of their activity; how the problems that manifest in daily work are connected to the joint work history and the structures of the activity. A central tool in the toolkit is the activity system model, which enables the description of the established local way of working. The model is depicted as a triangle that has six interconnected elements: subject, object, mediating artefacts or tools, community, rules, and division of labour. The historical development of the inner contradictions between the object of work and the elements of the activity system, as well as between all the elements of the activity system, are examined during the CL intervention. The activity system model, a model of expansive learning cycles, and a historical timeline template are tools that serve as second stimuli and enhance the mutual discussion on the activity, and support the participants' analysis and resolution of the problems. The participants can also develop their own concepts and tools. (Virkkunen & Newnham, 2013)

The CL is not a means to implement prepared plans, but a way to enable the actors' participation and generate initiatives and innovations for work development. It is a forum in which problems and disturbances are identified and examined, where solutions to the problems are handled together and finally experimented with in practice. (Virkkunen & Newnham, 2013) The challenge in an intervention, according to Virkkunen (2006a, p. 52), is to inspire the participants to analyse the activity from the perspective of a system and to avoid focusing on only narrowly defined, separate problems. Virkkunen and Schaupp

(2011, pp. 652–653) have suggested that a formative intervention could be considered a process. They argue that a chain of small interventions best supports the continuous development of an activity and thus sustains transformative agency.

In the following section, I describe the site of my research and then the CL intervention I conducted at this site.

### **3.2 Solution Services as a research site**

My research site was a work unit called Solution Services at one of the sorting centres of the Posti Group. The sorting centre plays a crucial role in the company's parcel distribution network. The activities of the centre include reception, sorting, and preparation for further delivery of the consignments. Thus, the activity of the main process is the handling of the material flow in the centre. The activity of Solution Services in turn is the solving of the problems that arise in this process or during any other phase of the delivery process, from the consignor to the consignee.

During the intervention, Solution Services consisted of eight blue-collar employees and a supervisor. Four of the employees were male and four were female. The supervisor was male. Four of the employees had worked in the unit for several years and four were junior members. In the 1990s, when activities began in the centre, the work had been handled by one person. In 2013, at the end of the follow-up period, the unit had ten employees. Thus, the number of employees had grown steadily over the years. However, it was not yet enough, especially during holidays and sick leaves.

The supervisor was very proud of the work carried out in the unit and willingly compared it to crime investigation. The employees were expected to be curious and unafraid to investigate problematic cases. They had to start to solve problems independently, bear uncertainty in not knowing all the facts and policies, and be able to make decisions even though the information available was incomplete. Time was a crucial factor, as the quick delivery of a consignment can be of utmost importance to the receiver. Every case was different, and no models or manuals were necessarily available on how to act in each individual case. With time and experience, the employee became more confident in different kinds of cases and problems. The most important thing was to understand the complex, big picture of the delivery process. This meant that the employee had to know the delivery process of the consignment, from the consignor to the consignee, in order to be able to determine the phase of the process during which a deviation may have occurred and where to start looking for it.

Some of the employees had worked in the unit for nearly ten years, but others for only a year or two. The knowledge and competence of the employees thus varied greatly. Knowledge sharing in the group had been problematic and the

employees had tried to solve this by task rotation. Task rotation meant that every employee took care of a couple of tasks for one week, for example, mending the packages or answering emails sent to the unit and then the following week they changed places with each other. The basic idea was that everybody learned to do everything in the unit, which was important during holiday seasons and sick leaves.

The employees used several tools and IT systems in their work. However, these did not sufficiently support the investigation process, or the quick and effective handling of the cases. The investigation process started when a deviation was noticed in the sorting centre or when Solution Services was contacted by telephone or email. Contact had to be made with several units in the company, for example, other sorting centres or different customer service units. Direct contact with the end clients, consumers and corporate customers, was unusual. Solution Services is part of a wide network in the company. One problem was that not all the people in the community, especially in the sorting centre, knew the activities of Solution Services, or what the unit's responsibilities were. Another problem was that working in a wide, changing network forced the employees to continuously update their contact information in order to handle their daily duties.

According to the current way of working, Customer Services communicated with the client and passed the information on to Solution Services. This process was slow and inflexible. Client enquiries were sometimes urgent and any delay could cause problems or even financial losses. The employees in the unit had thus adopted a more flexible way of acting in emergencies. They contacted the client directly. This was in conflict with the agreed way of working and resulted in disagreements between the employees of different units.

Management's pressure to increase the efficiency of the operations of the unit as well as the whole sorting centre was growing. The problem concerning the activity of Solution Services was how to measure something that cannot easily be standardized. The cases handled were different, and the time required for the investigation process varied from one hour to over 24 hours. Thus, measuring the number of solved cases or lead time, for example, did not clearly reveal the efficiency of operations. Furthermore, the employees pointed out that many things were beyond their influence and dependent on the actions of colleagues in the company network and the end clients. The problems and disturbances described above were placed into the activity system model in a CL session. They are depicted in Figure 3 in the following section.

The situation in Solution Services emerged as I interviewed the supervisor and the employees in the autumn of 2010. In order to find answers and solutions to the above-mentioned problems and tensions we decided together to carry out a CL intervention.

Despite the anonymity of the employees of the unit and the sorting centre, I hope that my presentation of the research site still enables the reader to understand



the activity carried out at the site. The names of the practitioners used in the summary of the main findings, in Chapter 4, are pseudonyms.

### **3.3 Change Laboratory intervention in Solution Services**

As I worked in the company as an HR consultant, I was quite well informed of the situation in Solution Services and the sorting centre, but I decided to interview all the relevant people to become better acquainted with the unit and work activity. Another of my aims was to collect mirror material for the CL sessions. The interviews were semi-structured, themed interviews. I had prepared an interview guide with open questions, but contrary to structured interviews with questions determined in advance, the interview guide was only advisory (Tracy, 2013, p. 139). The aim was to stimulate the respondent's narrative activity, to promote rich descriptions and explanations, and to encourage approaching the issue from different perspectives (Holstein & Gubrium, 1995, p. 77). According to Holstein and Gubrium (1995), an active interview perspective is an organized but flexible conversation, which is guided by the interviewer and the research agenda. A specific aspect of the active interview is that the interviewer conscientiously and cautiously promotes multivocality. It is important to let the respondent's responses determine whether all the questions in the interview guide are necessary. Especially when the interviewer has background information on the research topic or the experiences of the respondent, they can easily move from larger topics to more concrete questions. (Holstein & Gubrium, 1995, p. 77). Tracy (2013, p. 139) highlights the special characteristics and possibilities of unstructured interviews, which include listening to complex viewpoints, touching both the content and emotions of the respondent, and focusing on the important, interesting topics that emerge in the discussions.

The ethnographic data I collected consisted of the interviews of the participants, members of the management and neighbouring activities; work instructions and policy documents; photos and video-clips of problematic work situations; personnel surveys results, and old personnel bulletins. This data served as mirror material and first stimuli in the CL sessions. It revealed the historical causes of the problems and the inner contradictions in the activity system of the participants. In addition to the data I collected myself, the participants brought material to the sessions which we used as mirror material. This material included photographs taken of problematic or unclear work situations, documents sent by colleagues and end clients, and Solution diaries that the employees wrote about different cases.

All the CL sessions were well planned in advance. My own instructions for every session included a checklist of preparations, mirror material to be used in the session, the purpose of the session, the topics and the time reserved for each

one, key stimulating tools, and working methods. The participant assignments for between the sessions were also written on the instruction paper.

The CL started on 9 November 2010 with a presentation to the participants of the CL method and the concepts and tools to be used in the process. We had altogether nine sessions, the last of which was on 1 February 2011. The beginning of the CL was quite intense, and the first six sessions were held once a week. It was useful to gather together often, as the material to be discussed and analysed was extensive. The first four sessions focused mainly on questioning the mirror material and the problems detected in and between the elements of the activity system and neighbouring activities. After the sixth session, the participants had four weeks to experiment with the agreed tasks. In the seventh session, we introduced a task list to follow the realization of the tasks.

In the last session, the participants presented their ideas, experiments and results of the CL to the management. The production manager of the sorting centre was very interested in the CL and attended the sessions twice – the second and the last sessions. Meanwhile, on 14 December 2010, the supervisor and I had a meeting with the management group and discussed the process and results so far. Table 2 shows the progress of the CL and the dates and duration of the sessions, the participants, the contents of the session, and the mirror material.

Table 2. Overview of CL sessions (S = session)

S	Date	Duration, minutes	Participants	Contents	Mirror material
1	11/09 2010	115	7 employees, supervisor	Presentation of CL and problems related to the subject and the community	Feedback on the interviews of the participants
2	11/16 2010	121	6 employees, supervisor, manager	Future vision and scenario of the unit, and problems related to the object	Presentation by the production manager, feedback on the interviews, photographs and video-clips
3	11/23 2010	115	7 employees, supervisor	Historical analysis, and problems related to the object, tools and rules	Historical story and photographs, feedback on the interviews of the participants, managers, shop stewards and a supervisor
4	11/30 2010	119	7 employees	Cooperation in the community and analysis of the problems in the activity system	Feedback on the interviews of the clients
5	12/10 2010	115	6 employees, supervisor	Knowledge sharing and development of internal rules	A case presented by the supervisor

6	12/14 2010	122	6 employees, supervisor	Development of internal rules, Solution diaries, and present strengths and weaknesses of the group	Solution diaries, photographs and various documents
7	01/10 2011	121	6 employees, supervisor	Preparation of a task list, internal rules, and future opportunities and threats of the group	
8	01/18 2011	92	7 employees, supervisor	Preparation of a task list, strengths, weaknesses, opportunities and threats of the group, Solution diaries	Solution diaries and photographs
9	02/01 2011	118	8 employees, supervisor, manager	Processing of the task list, job descriptions, Solution diaries, metrics, SWOT, and presentation of the solutions to the management	

The main theoretical tool I used in the CL to determine the problems, disturbances and solutions was the activity system model of the practitioners' activity (see Figure 3). To understand the activity, the focus has to be on the object of the activity. According to Engeström and Sannino (2010, p. 4) 'the object is both resistant raw material and the future-oriented purpose of an activity'. It gives the activity purpose and motive, but is often so fragmented that 'a single actor can only grasp some aspects of the object' (Sannino, Engeström & Lemos, 2016, p. 603). In Solution Services, the object is investigation and handling deviations using a designed process that may have different ways of execution. Thus, the object can be seen as a variation of possible actions rather than an end. The actor or the group of actors is the subject engaged in the activity who produces the actual result and outcome. The outcomes are either intended or unintended end results. They can be non-material, like knowledge; or material objects, like the successful Solution Services delivery of a misdirected package.

Mediating artefacts are relatively stable and transmissible from one person to another. They can be material (e.g. physical tools and manuals) or symbolic instruments (e.g. images and signs), often intertwined and seldom separable from each other (Engeström, 1990, pp. 179–192). They act as mediators between the subject and the object of activity. In Solution Services, the mediating artefacts are, for example, trolleys, materials for packaging and various IT systems. In human activity, the subject is always part of a community, which constitutes the social basis of the activity (Engeström, 1987). The community shares a common interest in the object. Here the community consisted of a large network of groups and units

in the sorting centre and in different parts of the company. The division of labour and the rules defining and guiding the activity are essential for the activity to function. The division of labour defines the horizontal division of tasks and the vertical division of power (Engeström, 1990, p. 79). For its part, it enables the achievement of the set targets and efficiency requirements. The rules refer to the regulations and conventions that direct the actions. The activity of Solution Services is regulated by law and statutes and is guided by practices agreed in the group and the sorting centre.

Picture 1 is from the fourth session when the problems and disturbances were discussed and placed into the activity system model. The researcher-interventionist is on the left, pointing to the model on the wall.



Picture 1. Analysis of disturbances in activity system

Engeström and Sannino (2010, p. 7) state that the contradictions arising in and between activity systems are a driving force of change and development. They are not visible as such but manifest themselves as disturbances, conflicts and deviations in the quality of everyday work. Thus, in a CL intervention, the practitioners are engaged in analysing the detected disturbances and problems in the activity and the tensions between the elements of the system. According to Engeström and Sannino, changes beyond the activity systems both affect and cause gradually escalating disturbances between the elements. An important tool in the examination is a historical analysis of the activity, as this reveals roots and causes of contradictions and helps create a picture of the current situation. The picture further supports the envisioning of future possibilities.

According to Engeström (2001, p. 136), activity systems are open and constantly transform over time. The elements of the system develop, and new

elements are adopted from the outside. To recognize the present developmental phase of the activity and to understand the tensions and disturbances that are caused by the movement and generate contradictions in the system, we must examine the history of the local activity and the object, as well as the history of the theoretical ideas behind the activity. The objective of the historical analysis is to localize and resolve the tensions and contradictions emerging in the activity system and to develop the activity together with the actors and researcher-interventionists.

In this intervention, a historical timeline of the activity and the movement from the past to the present and the future in the analysis of the discussions helped the participants identify the changes that had occurred in the elements of their activity system and the historical causes for the problems in daily work. When the work activity is examined using the activity system model, the structural tensions and disturbances come to the fore. The model concretely served as a tool for the Solution Services employees to locate the problems and understand the connections between them in the activity system.

The problems and disturbances that manifested in the day-to-day work and practices of the employees have been described in Section 3.2. Figure 3 places these detected problems and disturbances into the activity system model of the practitioners. Contradictions between the elements are depicted by a lightning shaped bidirectional arrow. The first contradiction that emerged was between the object of work and the mediating artefacts that did not support the effective investigation of the growing amount of problematic cases, causing the practitioners to feel inadequate and unmotivated in their work. The second contradiction that emerged was between the object and the rule of cost efficiency. The third contradiction was visible between the object and the division of labour. Due to the differences in the competences and experience of the employees, not everybody could perform the same duties. Thus, the object of the work was not equally clear to all and the division of labour was considered unclear and unfair. The fourth contradiction that emerged was between the subject and the constantly changing and growing community network. The objective of Solution Services is to quickly handle deviations in the delivery process. This may require direct contact with the consignee. The objective of Customer Services in turn is to attend to the needs of customers and communicate with them. I will return to these problems and contradictions in Section 4.3 when I discuss the solutions the participants developed during the intervention.

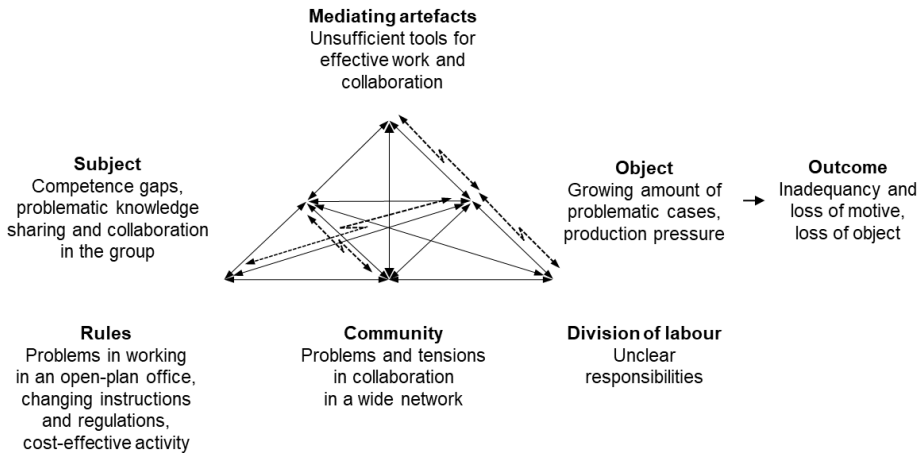


Figure 3. Detected problems and disturbances in activity system of Solution Services

After the CL had ended, to follow the status and development of the agreed ideas and tasks, we held several follow-up meetings with the participants during the spring of 2011. I also interviewed all the participants during the summer of 2011 to hear their experiences and opinions of the CL. The interviews helped me see the current situation that the practitioners faced in the company, as at this phase, I no longer worked in the unit. Major organizational changes had taken place in the sorting centre and the employees feared that they would lose their opportunities to participate in work development, as they had experienced in the CL.

During the intensive CL intervention, the employees had had opportunities to influence and develop their work practices. After the CL ended, because of the changes in the organization, the employees feared that they could no longer participate in work development. Thus, in the follow-up meeting on 23 September, the participants suggested and even demanded that they should have team meetings. It was agreed that the employees would hold team meetings once a week and the supervisor would attend these meetings when invited or when he had issues to discuss with the practitioners. The first team meeting was held on 13 October 2011 and the last on 15 March 2012. I did not participate in every team meeting, but selected the meetings I attended so that my participation covered the entire follow-up period of the team meeting practice, including the beginning, the middle phase and the end.

Furthermore, to follow the sustainability of transformative agency and the initiatives and innovations invented and adopted in the unit, I interviewed the employees during the summer of 2013 and the supervisor in the autumn of 2013.

### 3.4 Data collection methods

Data collection for this study started in October 2010 with the interviews of the eight employees, the supervisor, two management representatives, two shop stewards, and three customer service representatives from different units. I conducted altogether 16 interviews during the period from 1 October to 10 November 2010. The length of the interviews varied from 56 to 143 minutes. The interviews were audio-recorded and transcribed verbatim. The transcribed material was written in Times New Roman 12 p font, line spacing 1.0, and comprised 126 A4 pages.

I applied the active interview perspective (Holstein & Gubrium, 1995). My interview guide and its open questions directed the discussion and ensured that all the same topics were covered with both the CL participants and the other informants. The discussion themes concerned the elements of the participants' activity system and the interfaces with neighbouring activities in the past, present and future. The focus in the interviews of the customer service representatives was on collaboration and joint tools. The themes in the interviews of the management representatives and the shop stewards were related to the current organization of work today and its development in recent years. Questions related to the future perspectives of the Logistics Centre and Solution Services were covered in the management representatives' interviews. My aim was to encourage reflection on their own experiences in the work unit and the company and to address the issues from different perspectives. The idea was to cultivate the informant's narrative activity and promote fruitful descriptions. As I was already familiar with the activity in the work unit and in the company, I could easily shift the focus from concrete to more general issues. The interview guide questions are presented in Appendix 2.

Ethnographic data on the activity of the organization are a foundational prerequisite for a CL intervention. In general, activity-theoretical studies often apply ethnographic methods in data collection (for example Kajamaa, 2011; Kerosuo, 2006; Puonti, 2004; Rainio 2010). The problems that arise in interviews and discussions, and the disturbances observed in the activity are used as mirror material in CL sessions. The mirror material used in the CL sessions of Solution Services was quite inclusive and comprised summaries and citations from the audio-recorded interviews and different kinds of documents such as process descriptions, surveys conducted in the organization, old personnel bulletins, feedback from colleagues and customers and Solution diaries, as well as photographs and video-clips of the participants' activity.

The CL intervention consisted of nine sessions. The first session was held on 9 November 2010 and the last on 1 February 2011. The length of the sessions varied from 92 to 122 minutes. The sessions were video- and audio-recorded and transcribed verbatim by the researcher after the sessions. The transcript contains a total of 7941 speaking turns.

After the CL came an extensive follow-up period, extending from 9 February 2011 to 15 March 2012. During the spring and autumn of 2011, four follow-up meetings were held. The length of these meetings varied from 48 to 96 minutes. They were audio-recorded and transcribed verbatim by the researcher. The transcript contains a total of 2065 speaking turns.

I was in contact with the supervisor and the practitioners several times during the summer of 2011. In addition to many telephone and email conversations, I had a meeting with the supervisor on 16 June, during which we discussed the challenges caused by the organizational changes at the sorting centre. I also interviewed all the participants of the CL during the summer. These interviews were audio-recorded but not transcribed verbatim. The duration of the interviews varied from 23 to 137 minutes. As in the interviews conducted before the CL intervention, I applied the active interview technique in these interviews. I used a short interview guide, the purpose of which was to encourage the interviewee to reflect on his or her experiences of the CL and to ensure that all the interviewees were asked the same questions. The interview guide comprised five questions that opened up the discussion. 1) In your opinion, how has the CL served as a tool for development? 2) What do you think was the best thing about the CL? 3) What do you think was the most problematic thing in the CL? 4) Which things enhanced your work, and are they still in use? 5) Have you developed new practices?

In a follow-up meeting on 23 September 2011, the employees highlighted their desire to participate in work development. As a result of the negotiations it was agreed that the employees would be responsible for organizing team meetings. The first team meeting was held on 13 October 2011. During the follow-up period until 15 March 2012, altogether 20 meetings were held, of which I participated in 10. I selected these meetings so that they covered the beginning, the middle phase and the end of the follow-up period. I audio-recorded the meetings and the recordings varied in length from 15 to 61 minutes. The data were transcribed verbatim by someone outside of the research team. The transcript contains a total of 7746 speaking turns.

Table 3 shows the data that were analysed in this study to answer the research questions. It consists of the video- and audio-recorded data from the CL sessions, the follow-up sessions and the team meetings.

Table 3. Data collected during CL intervention process and analysed in this study

Types of data	Amount and contents of data
CL sessions 11/09/2010–02/01/2011	9 sessions, audio- and video-recorded data, duration 92–122 minutes, 7941 speaking turns
Follow-up sessions 02/09/2011–09/23/2011	4 sessions, audio-recorded data, duration 48–96 minutes, 2065 speaking turns



Team meetings 10/13/2011–03/15/2012	10 meetings, audio-recorded data, duration 15–61 minutes, 7746 speaking turns
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To follow the activity and sustainability of the initiatives and innovations, I interviewed the participants of the CL during the summer of 2013. As two participants could not be reached, I only interviewed six. The supervisor no longer worked for the company but was willing to be interviewed in December 2013. These interviews were audio-recorded. I did not transcribe them verbatim but I examined the speaking turns that contained references to the initiatives and innovations initiated during the CL and the follow-up period, to check their status. The interview guide comprised six questions, which opened up the discussion on the experiences of the team meetings and CL as well as the current methods of work development: 1) Are the team meetings still in use? 2) In your opinion, how did the team meetings function as a development tool? 3) What do you think was the best/most problematic thing in the team meeting practice? 4) Are the practices developed in the CL/in the team meetings still in use? 5) How did the CL increase collaboration or different collaboration practices? 6) Have you developed new practices?

Table 4 shows the data beyond the analysed data that was used as mirror material in the sessions or as support material in the analysis. The data consist of various material from 1 October 2010 to 2 December 2013, including several audio-recorded interviews and meetings, minutes of meetings, material produced in the CL sessions, my field notes, blog posts written by the supervisor and published on the company intranet, personnel bulletins, photographs and video-clips, and various documentation material. During the three-year period I had many telephone and email conversations with the production manager of the sorting centre and the supervisor, which helped me understand the work activity and changing situations at the centre and in the work unit. In addition to the collected data described above, I also had many informal discussions with the practitioners when I visited the research site. These discussions expanded my understanding of the situation from the perspective of the employees

Table 4. Data collected from Solution Services unit in 2010–2013

Types of data	Amount and contents of data
Planned interviews 10/01/2010–11/10/2010	16 planned interviews, audio-recorded data, duration 56–143 minutes, transcribed material 126 pages
Follow-up meeting with the supervisor 06/16/2011	1 interview meeting, audio-recorded data, duration 60 minutes
Planned interviews 06/30/2011–09/16/2011	8 planned interviews, audio-recorded data, duration 23–137 minutes

Planned interviews 05/21/2013–12/02/2013	7 planned interviews, audio-recorded data, duration 33–91 minutes
Field notes	15 pages written by researcher at the office
Minutes of meetings from the nine CL sessions	9 pages
Minutes of meetings from the four follow-up sessions	4 pages
Minutes of 20 team meetings	58 pages
Task list from the CL sessions and the follow-up sessions	14 pages
History story	3 pages
History sheet	1 page
Solution diaries	24 pages
Common rules for open-plan office	2 pages
Minutes of meetings with Customer Services	6 pages
Blog written by supervisor on intranet during the CL (not analysed but used as support for making interpretations)	13 pages
Articles written by legal representative of work safety in personnel bulletins (not analysed but used as support for making interpretations)	84 pages
Documents (not analysed but used as support for making interpretations)	140 pages of documents related to annual plans, process descriptions, work instructions, quality handbook of Logistics Centre, customer satisfaction surveys, feedback from colleagues and customers
Photographs	36 pictures taken by researcher and participants of people, packages, work situations and work premises
Phone calls, emails	Several during the 3-year period
DD sessions with supervisor 24.2.2011; 9.3.2011; 24.11.2011	3 planned interviews, audio-recorded data, duration 54–102 minutes

In addition to the CL intervention, I conducted a DD intervention with the supervisor. The DD intervention method was developed by Mott (1992) and has been applied and expanded by several CHAT theorists (see Heikkilä & Seppänen 2014; Toiviainen 2003; Virkkunen, 1995). According to Virkkunen (1995) the method is based on the idea that a person only learns and develops by taking on challenges. The aim of a DD intervention is to support a person's transformative agency. The DD process consists of three sessions, including individual and group discussions between the participant, a colleague and an interventionist, or alternatively between the participant and an interventionist. The sessions are planned well in advance and use several tools. During the dialogue process, the

participant is helped to understand their professional situation and agrees to put on concrete developmental tasks into practice. The development of both the person and the tasks are then followed. (Heikkilä & Seppänen, 2014, p. 8)

The DD process with the supervisor, Tom, consisted of three private sessions between Tom and me. The data of these sessions were not analysed for the purposes of this study but were utilized as support material. The process and results are described in Chapter 7, which discusses the practical implications of this study. Furthermore, even though the DD process was not an integral part of the CL intervention, the presentation serves to show the reader the implications and the credibility of the findings of this study.

### 3.5 Analysis methods

The methodology of this study derives from CHAT (Vygotsky, 1997a; Leont'ev, 1978; Engeström, 1987) and the methodology of formative interventions (Engeström, Sannino & Virkkunen, 2014). A study based on the methodology of formative interventions applies an intervention to an activity of actors in an organization or a community in the real world, and examines the effects of this intervention.

This study continues a new tradition of formative intervention studies which cover the whole intervention process and analyse the data in detail to reveal the epistemic and interactional dynamics of discursive manifestations; for example, of contradictions (Engeström & Sannino, 2011), expansive learning actions (Engeström, Rantavuori & Kerosuo, 2013) or transformative agency (Vänninen, Pereira Querol & Engeström, 2015). The focus of the analysis is not on the linguistic, rhetorical and argumentative organization of talk (Silverman, 2014, p. 318) or on purely intersubjective relations (Tremion, 2013, p. 163) between the speakers, as in traditional discourse analysis (see, for example, Dervin & Liddicoat, 2013). Neither is the focus on examining the ways of producing orderly talk-in-interaction, as in conversation analysis (Silverman, 2014, p. 318). The focus is on anchoring discursive expressions of transformative agency in speaking turns in action. Transformative agency is expressed in both discourse and action. Thus, it is equally important to examine the activity and reality as what is expressed about it. As Sannino (2008, p. 255) states, 'discursive agency fulfils its agentive nature by progressively transcending the situated confines of discourse and taking the form of concrete developmental actions'.

The method of identifying discursive expressions of transformative agency is based on six main types of participant's transformative agency identified initially by Sannino (2008) and further developed by Engeström (2011) and Haapasaari, Engeström and Kerosuo (2016). These six types are: resisting, criticizing, explicating, envisioning, committing to take actions, and taking consequential actions. First, the transcribed data were divided in the analysis into topical

episodes with a clear beginning and end. Second, the speaking turns were carefully examined and turns containing an expression of transformative agency were analysed. Focusing on speaking turns risks marginalizing more silent people. However, the data analysed in this study consist of extensive audio- and video-recorded data collected over a long period of time and thus takes the contribution of every participant into consideration.

The focus of Article I is on the emergence of the participants' transformative agency during the CL. The data consisted of the speaking turns in the nine CL sessions. These speaking turns were carefully examined and coded according to the six types of transformative agency. The number and frequencies of types of expressions of transformative agency in the total number of speaking turns was calculated. As the model of activity system supported the examination of problems and disturbances in work during the intervention, it was logical to also use it in the analysis to examine which topics of discussion nurtured transformative agency. Despite the risk of disturbing the dynamics of the elements of the activity system, the contents of the speaking turns were coded according to six elements: subject, object, tools, community, rules, and division of labour. The frequencies of the discussion topics' appearance in the expressions of transformative agency were counted.

Examination of the distribution of the expressions of transformative agency among the participants reveals not only how active the participants are but also how an initiative presented by an individual is collectively developed further. This question is tentatively addressed in Article I, but more thoroughly examined in Article III, which studies the initiator and outcomes of the initiative.

If the speaking turns had been taken out of the context and examined in isolation, the dynamics of discourse would have been lost. Thus, Article I also examines the topical episodes. The investigation of speaking turns and episodes revealed a clear change in the quantity and topics of expressions of transformative agency in the middle of the CL, in session six. This session showed a strong turning point in the intervention. A turning point is defined as 'a qualitative change in the nature of the participants' discourse and a jump in the quantity and quality of their expressions of transformative agency' (Haapasaari, Engeström & Kerosuo, 2016, p. 12).

The longitudinal character of this research provided a methodological advantage to studying the emergence and evolution as well as the sustainability of transformative agency. It allowed us to examine whether a mechanism, a second stimulus, sustained the employees' agentive actions.

The focus of Article II is on the sustainability of transformative agency during the follow-up period after the CL intervention. The data analysed consisted of speaking turns in one follow-up meeting and 10 team meetings. The analysis followed the same methodological guidelines that were applied in the analysis of the data from the CL intervention described in Article I. The methods used was

that of identifying the discursive expressions of transformative agency and that of locating the topical contents in the activity system model. To reveal the sustainability of transformative agency during the follow-up, the peak and low points in the evolution of the types and topics of expressions of transformative agency were selected for a detailed qualitative analysis. To determine whether the participants constructed a mechanism to support their transformative agency, the principle of double stimulation, as modelled by Sannino (2015), was applied as an analytical tool. The creation and use of the second stimulus during the follow-up were qualitatively analysed.

Article III examines the generation of initiatives and innovations, and the construction of the initiative paths and factors that contribute to the implementation or termination of an initiative. The data examined in the article were extensive and consisted of the speaking turns in the nine CL sessions, the four follow-up meetings and the 10 team meetings. The interviews of the CL participants after the follow-up period were utilized to reveal the sustainability of the initiatives and innovations.

Article III integrates three different classification methods. First, the analysis of the initiatives and profiles of the initiative paths required a new method, which was developed during the examination. This method was based on the idea of a phase analysis introduced by Van de Ven and Poole (1990). The speaking turns were carefully examined and the turns containing an idea expressed for the first time formed the starting point of the analysis. Every meeting in which the initiative was discussed created a link on the initiative path. Depending on the number of meetings in which the initiative was elaborated, the paths constructed were short, medium-long or long initiative paths. The coding categories for the profiles also emerged from the data. The initiative paths were codified to six profiles: implemented, momentum lost, terminated, implemented once, changed, and still open.

Second, as the initiatives in the data were not particularly radical, a finer categorization than radical and incremental was needed. The classification into three types, initially developed by Engeström, (1995) was utilized in the analysis: solution, process and systems innovation. In order to apply this classification, it was important to examine which theme of discussion the initiative was related to and to determine whether it was linked to a certain work process. The categories for the themes emerged from the empirical data and were developed during iterative reading of the data. After the examination of the themes and processes, the initiatives were analysed from the perspective of the activity system. This progress of the analysis enabled the classification of initiatives into solution, process and system-level innovations.

Third, in the examination of the impact of power relations on the implementation of an initiative, a four-field grid was drawn. The horizontal axis, consisting of the dimensions of power to/power over and resistance, originates

from the system of power relations described by Hardy and Clegg (1996). The vertical axis, consisting of the top-down and bottom-up dimensions, was based on the research of Blackler, Crump and McDonald (1999). The contents of the fields came from the empirical data.

A summary of the research questions asked in the three articles, the data analysed, the analysis methods, and the research articles' key concepts are presented in Table 5.

Table 5. Summary of dissertation articles

<b>Article</b>	<b>Research questions of the articles</b>	<b>Data</b>	<b>Methods of analysis</b>	<b>Key concepts</b>
I	<p>1. What types of expressions of transformative agency are found in the discussions of a CL intervention, and how do they evolve over time?</p> <p>2. How are the expressions of transformative agency related to the topical contents of the CL discussions?</p> <p>3. How is the initiation of the expressions of transformative agency distributed among the participants of the CL, especially in terms of possible transitions from individual to collective forms of transformative agency?</p> <p>4. Are there turning points in the emergence and evolution of the participants' agency?</p>	9 CL sessions	Analysis of the types of discursive expressions of transformative agency, analysis of discursive expressions related to elements of the activity system, and analysis of the topical episodes	Transformative agency, Activity system, Turning point
II	<p>1. Did the employees construct a second stimulus and if they did what was it and how was it used?</p> <p>2. Was the employees' transformative agency sustained and if it was, can this be explained with the help of the principle of double stimulation?</p>	1 follow-up meeting and 10 team meetings	Analysis of the types of discursive expressions of transformative agency, analysis of discursive expressions related to elements of the activity system, and a qualitative analysis of double stimulation	Transformative agency, Double stimulation, Sustainability
III	1. Do initiatives become paths, and if they do, what kind of profiles of initiative paths are there to be found?	9 CL sessions, 4 follow-up meetings,	Analysis of the profiles of initiative paths, analysis of the types of	Path creation, Innovation, Power relations

	<p>2. What types of innovations and what kinds of dynamic relationships are found within initiatives?</p> <p>3. Which factors contribute to, or prevent the implementation of an initiative, and especially, what is the role of power relations?</p> <p>4. To what extent are initiatives and innovations sustainably implemented?</p>	<p>10 team meetings and interviews of the CL participants</p>	<p>innovations, and analysis of power relations</p>	
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### 3.6 Sustainability and continuity of formative interventions

According to Nocon (2004, p. 729) sustainability is a process that requires collaboration, communication, creativity and continuity. It requires the involvement and collaboration of all parties. The participants must have opportunities to communicate, express their concerns and ideas, and to be heard. Development processes should also remain open to changes and enable the implementation of new creative ideas. The sustainability of novel ideas and innovations is thus a continuing process and requires long-term commitment. Wals and Schwarzin (2012, p. 16) also stress the role of dialogic interaction in collaboration and the stimulation of different perspectives. Furthermore, I suggest that participants should consider the initiatives and innovations as important from the perspective of their activity in order to enhance the sustainability of the innovations. Even though innovation can be considered a continuous process, new ideas and solutions need to be anchored in material artefacts, tools, rules and practices in order to continue over long periods of time.

The notions of path dependence and path creation highlight the sustainability of practices. These notions have received attention in organization and management research. In the process of becoming path dependent, former decisions impact on future events and courses of action (Gruber, 2010, p. 1160). Path dependence refers to factors that maintain stability and existing routines in organizational paths. Thus, it may cause problems in organizational development and change (Van Driel & Dolfsma, 2009, p. 65). For example, David (1985) discussed how the dominance of the layout of the 'QWERTY' typewriter keyboard has led to a lock-in situation that is hard to change. Schreyögg and Sydow (2011, p. 323) state that the initial phase of becoming path dependent has a broad range of available options. Gradually, the range of possible alternatives diminishes and finally the dominant solution or practice is fixed and locked in. However, this process is not linear, and the result cannot be predicted. According to David (1985) the dark side of path dependence is that inefficient and second-best solutions become locked in.

Garud and Karnoe (2003, p. 281) have criticized the concept of path dependence for overlooking the agency of actors. They have presented a perspective of path creation that highlights the embedded agency of actors in the creation of new paths. The actors' ability to question existing practices, to imagine creative concepts of a new solution and to implement these ideas is crucial in path creation and development.

According to Virkkunen and Schaupp (2011), the needs for collaboration, communication and creativity are met in formative interventions. The aim of a CL

intervention is to engage the participants in work development and support them to collectively analyse the activity. This way of organizing the CL sessions promotes collaboration and communication between the participants and management. I maintain that it is most important that managers communicate with the practitioners involved. For example, current threats and opportunities and future visions need to be communicated to the employees. Furthermore, the aim is to sustain the creativity of the participants so that they take steps to develop the activity and generate initiatives and innovations to improve work practices (Virkkunen & Schaupp, 2011). I suggest that the objective is also to ensure continuity and help the actors create means and ways for themselves to nurture and sustain their transformative agency and the long-term development of their activity.

Virkkunen (2006a, p. 61) highlights the challenge of maintaining shared transformative agency after the CL has ended and the external interventionist is no longer available. Typically, as the resources to develop activity are often located in management and a special R&D unit, it is challenging for the grass-roots personnel to participate in development work and sustain shared transformative agency.

The concept of the expansive learning cycle (Engeström, 1987) contains the idea of sustainability. Using this concept, development can be described as an expansive process during which the learners create a novel operational model. The final action or stage in the cycle is consolidation. It bears the idea that a new model or new artefacts are put in use and established as a new practice that is vital for sustainability. This final stage is important and may extend over a long period of time.

The CL intervention in Solution Services activated a desire among the participants to take part in developing work activity. After the CL ended, the participants created a forum in which they could continue work development. The long follow-up period enabled me to follow the sustainability of the initiatives and innovations generated in the CL and during the follow-up, as well as the participants' transformative agency.

Routines are closely related to the notion of sustainability. According to Gersick and Hackman (1990), they are central to organizing work and activity, as they provide stability. However, because routines are fixed structures, they can also be sources of inertia and inflexibility. Recent research has shown that routines can nonetheless be a source of flexibility and change (Feldman & Pentland, 2003; Pentland & Feldman, 2005). Feldman and Pentland (2003, pp. 113–114) argue that a routine is performed by individuals and groups and by generating new ways of applying a routine people can take agentic actions and influence the flexibility of and changes in routines. The work in Solution Services consists of solving cases

and problems through the highly routinized processes of the sorting centre. The sustainability of transformative agency requires that employees are able to recognize and resolve work-related problems and existing routines, and even create new routines.

The strength of this study lies in its long-term follow-up period. During a long follow-up it is possible to examine the sustainability of the new ways of working initiated and tested during the intervention and follow-up period. Often, the results of development work are only crystallized after a longer time period (Engeström, Kerosuo & Kajamaa, 2007). Engeström, Kerosuo and Kajamaa (2007, p. 15) have discovered that the sustainability of development is enhanced by joint development work between management and practitioners on a practical level. This differs from the traditional project type of development in which the decision-making process of the management and practical development work are separated. Furthermore, development work has to be tightly related to day-to-day work. Sannino, Engeström and Lemos (2016, p. 629) have also discovered that learning and organizational authorship by practitioners is a longitudinal and collective process, which is grounded in practical actions and material artefacts. Engeström (2000, p. 166) reminds us that development is not always a linear and vertical process that results in better performance. It can also take steps backwards or sideways and proceed horizontally in a zigzag movement.

The strength of a CL intervention lies in the engagement of practitioners, in the support for analysing the activity and in the range of tools and forums available to develop work practices. At best, CL is a learning process that motivates and activates actors to capture and nurture their transformative agency and to continue developing work activity.

### **3.7 Generativity and quality of qualitative research**

The aim of formative interventions is not to produce generalizable standardized solutions that can be utilized and transferred to other activities. The objective is to obtain generative solutions in local activity and research tradition. In local activity, generativity is visible in the continuity and further development of the solutions initiated during the intervention. The participants analyse contradictions in local activity, create solutions to current disturbances and problems, and envision future possibilities in their own activity. In the research tradition, the aim is to further develop the methodology. (Sannino, Engeström & Lemos, 2016, p. 605)

Local continuity in this intervention is empirically manifested in management's decision to engage the practitioners of Solution Services in the CL intervention. This CL was actually the second CL process in the company. The

first one, though in another department, was conducted in 1995. Based on the experiences of this first CL, the management of the company was most interested in CL. They realized that one way in which to find solutions to existing problems and efficiency demands was to engage the employees in the work development. The production manager of the sorting centre challenged the practitioners in the second CL session by saying that ‘What is important during this [CL] process is how you perceive the operations in this organization and how you can produce new ideas for your own activity and other phases of the process. How you find solutions that help us change the processes and make them truly more effective’. (November 16, 2010, speaking turn 50)

In addition, local continuity was visible in the instrumentality of the team meetings created by the practitioners and for which the participants were responsible after the CL had ended. This second stimulus, which the participants created to sustain transformative agency and to support the continuity of work development, can be considered evidence of generativity.

In the research tradition and the research community, generativity is seen as domain appropriation and method appropriation. Domain appropriation means that the CL method is utilized and further developed in other sites and contexts within the same domain. Method appropriation can be observed in other interventions and studies in which the methods of analysis created in earlier CL interventions are utilized and further developed. (Sannino, Engeström & Lemos, 2016, pp. 605–606)

Concerning domain appropriation, several CL interventions have been conducted in work organizations such as Solution Services, starting from the very first CL in the Posti Corporation, conducted by Professor Engeström and his colleagues in 1995. Other CLs in work organizations have also been conducted in, for example, the field of health care (Engeström, Kerosuo & Kajamaa, 2007; Kerosuo, Kajamaa & Engeström, 2010), the home care of elderly people (Nummijoki & Engeström, 2010), libraries (Engeström, Rantavuori & Kerosuo, 2013), agriculture (Jalasi, 2020; Lotz-Sisitka et al., 2017; Mukute et al., 2018; Vänninen, Pereira Querol & Engeström, 2015), and education (Barma et al., 2017; Englund, 2018).

Regarding method appropriation, several recent studies have utilized and further developed the method of analysing the interactional dynamics and discursive expressions of the participants throughout the CL process. Initially, the classification method of the types of agentic action was created by Sannino (2008). Engeström and Sannino (2011) have examined the interactional dynamics and discursive manifestations of contradictions. Furthermore, Vänninen, Pereira Querol and Engeström (2015) and Moffitt (2019), for example, have focused on participants’ discursive expressions of transformative agency.

Several scholars have discussed the quality criteria of qualitative research and highlighted various viewpoints (for example, Hammersley, 1992; Moisander & Valtonen, 2006; Silverman, 2014; Tracy, 2013). Next, I address the key points for evaluating qualitative research presented by Tracy (2013). Tracy (2013, p. 230) argues that the general criteria for high quality applied in non-qualitative research – generalizability, objectivity and reliability – do not sufficiently translate to excellent qualitative research. Most often, qualitative research aims not to create general laws but to generate explanations based on activity in a local context. Attention has to be paid to rigour, sincerity, credibility, resonance and ethical questions, and the study must create a meaningful coherence.

Rigour means that the study is carefully and appropriately conducted (Tracy, 2013, p. 231). The rigour of this study is visible in both the theoretical and methodological handling of the subject. By reviewing the relevant scholarly literature in the field and examining the main concepts from different theoretical angles, I have presented where this study is positioned. I have also clearly and in detail presented the intervention from which the empirical data of this study derive, and the methods of data collection. In data analysis I have used analysis techniques and coding frames that continue and develop the theoretical orientation I represent, and which are innovative from the standpoint of my theoretical background in CHAT.

I demonstrate my sincerity in the next section by discussing my position as a researcher. My aim is to reflect on my role as a researcher-interventionist, my relationship with the research object and the participants, and to present my research practices. In this section I also address the ethical questions of my research.

Credibility, according to Tracy (2013, p. 235–238), refers to thick description, triangulation, multivocality, and member reflections. Thick description means that the researcher writes as detailed information as possible about people and activities in the research report. This can be achieved especially when the researcher has tacit knowledge of the object of study. I have aimed to present a thick description of my research object by showing concrete details using excerpts from the data and utilizing the tacit knowledge I acquired from the research context while working at the site for a period of time.

Triangulation refers to combining various theoretical approaches and using different types of data and data collection methods in order to present a comprehensive, objective description of the object of study (Silverman, 2014, p. 91). In this study, triangulation actualizes in the theoretical and methodological principles. The theoretical basis lies in CHAT and formative interventions, but in the articles and in this summary I have reviewed and discussed focal theoretical literature that examines the theoretical concepts and is relevant from my research

angle. Concerning methodological triangulation, I used multiple methods of data collection and gathered versatile empirical data over a long period of time. The data consist of transcribed audio- and video-recorded intervention sessions, interviews and observations. In the analysis I combined qualitative analysis with quantitative data by making tabulations of the data. According to Silverman (2014, p. 95) this is an appropriate method for validating the study.

A central principle in my data collection, as in activity theoretical studies in general, was the gathering of data that takes into account the multi-voicedness of the research object. The data used in the analyses comprised transcribed video- and audio-recorded material from the CL sessions, the follow-up sessions and the team meetings after the CL. Data used as mirror and support material were collected by interviewing the participants of the CL and other relevant people, observing the day-to-day work activity of the participants, taking photos and video-clips of the activity, reading a great amount of different documentation written in the company, and writing ethnographic field notes. In the data analyses I utilized different methods to answer the research questions posed in the articles. Some of the methods were from organizational research and others from CHAT and were further developed in this study. Some coding categories were developed on the basis of iterative reading of the data. The coding was elaborated in the CL research team and tentative interpretations and disagreements were collectively discussed and resolved. I have described the methods of analyses in the articles in as much detail as possible within the space limits of scientific journals and presented several examples of every coding category, including direct excerpts from the data.

To write a rich description and to strengthen the credibility and validity of the results I applied the method of respondent validation (Silverman, 2014, p. 93). I further describe the reflections, insights and feedback of one of the participants, the supervisor, Tom, in Chapter 7. I present how he experienced the CL intervention and the consequences of the intervention for the work unit from his point of view.

Resonance according to Tracy (2013, p. 238) means that the study ‘impacts on audience’. The reader discovers something in the study that they consider important and that can be transferred to their own situation. I believe that transformative agency and the issues of participation and empowerment addressed in this study are of interest and importance in several workplaces.

Finally, to create a meaningfully coherent study I have strived to write so that the purpose; goals and results; the reviewed literature; and the theoretical, methodological and practical implications are clear to the reader. My style of writing is more concise than abundant. Thus, I hope that despite my aspiration for explicit argumentation and communication, the text is fluent and easy for the

reader to follow. So far, I have emphasized the importance of the topic under study and the issues related to change efforts in organizations. I will return to the results and the contribution of this study to research in the field of agency, learning and work development in Chapters 5 and 6. In the following section I consider my position as a researcher-interventionist.

### **3.8 Position of the researcher-interventionist**

I worked in several development and HR positions in different business groups in the Posti Group in 2008–2013. From August 2008 to March 2010, I worked as development manager in the Logistics business group. From April 2010 to January 2011, I worked as HR consultant in the sorting centre in which the CL intervention of this study was conducted. The sorting centre belonged to a business group called Mail Communications, which was responsible for delivery services. From January 2011 to January 2012, I occupied the same position in another sorting centre. From February 2012 to December 2013, I worked as an HR manager in the Parcel and Logistics Services business group. The data for this study were collected from the autumn of 2010 to the autumn of 2013 in Solution Services.

As an in-house development and HR professional it was easy for me to enter the research site. Solution Services and the sorting centre were already familiar to me before beginning the data collection for the intervention in October 2010, as I had begun working in the centre in April 2010. However, during the intervention process, I learned a great deal more about the work activity and day-to-day life of the employees. It was most interesting for me to interview the practitioners before the intervention, in the middle phase and at the end of the follow-up period. Our discussions in the CL sessions and outside the ‘laboratory’ were very fruitful. Even though the work of the practitioners was sometimes routine and quite hard, they all highly valued their own knowledge and competence and felt that their work was important. These discussions opened my eyes to the employees’ professionalism and passion for work development.

I first suggested the idea of the CL intervention as a solution to the many problems and challenges the work unit was facing in the discussions with the production manager of the sorting centre and the supervisor of Solution Services in the summer of 2010. The idea continued to develop through interviews with another supervisor and shop stewards in the early autumn.

The supervisor of Solution Services and the employees reacted positively to my suggestion. From the beginning, they were curious and excited. The participants expected more than the traditional development of projects that

follow each other and do not necessarily have any sustainable effects on routines. They were eager to participate in work development.

In formative interventions, the participants examine their activity and the contradictions manifested in various problems and disturbances. The aim is that they collectively develop their work practices and potentially reconceptualize the object of their activity. Thus, the participants own the process. The role of a researcher-interventionist is to provoke and support this process of learning and the emergence of the participants' transformative agency. The researcher-interventionist provides the participants with the general concepts and principles developed in CHAT and formative interventions, and conceptual tools from the CL toolkit. However, the participants can also create their own artefacts and tools on the basis of their activity.

The CL is a demanding intervention process. In their role as an interventionist-researcher, the researcher has to balance different expectations. As the designer of the CL process and the sessions, and as the facilitator of work development, they support the learning and participation of the participants. As an interventionist, they also participate in the process and analysis. In their researcher's role they have to obey research ethical rules and demands. Neyland (2008, pp. 81–89) argues that perhaps the most difficult but vital issue in ethnographic studies for the researcher is to find the right balance between the role of a participant and an observer. The researcher has to get close to the organization and the research subjects to learn to know them, but must also keep enough ethnographic distance in order to remain as objective as possible and not manipulate what is happening in the organization. I maintain that the researcher has to be especially careful when presenting the results of the study, as there is a risk that they will look at the process and the results through overly optimistic lenses.

Blackler (2011, p. 733) challenges activity theorists to reflect on their role as interventionists and to consider how to intervene in the activity and learning of the participants. Should the researcher-interventionist remain a facilitator of learning and work development for the participants or take a more directive role? Should they focus more on promoting the agenda of the management or suggest their own development ideas on the basis of their observations at the site? To what extent should they agree with the participants on development issues or challenge them to think out of the box? To what extent should they lean on facts or listen to their own intuition?

I audio-recorded all the interviews, follow-up meetings and team meetings, and both audio- and video-recorded the CL sessions. Thus, I was able to return to and reflect on my role in these situations. Through the video-recordings of the sessions in particular I was able to examine my own role and behaviour: how I engaged the participants in wider discussion, how I listened to suggested ideas and how I



promoted collective development and commitment to take concrete actions. As the intervention extended over a long period of time, and I gathered data quite comprehensively, I ensured that all the parties were heard, also the more silent ones. The size of the collected data is a particular strength of this study.

As the mirror material consisted of comprehensive data, I was able to present developmental ideas based on the discussions and observations at the site. I drew ideas from, for example, interviews with representatives in neighbouring activities and video-clips of problematic situations at work. I relied on facts from surveys and instruments that measure the efficiency of work but also on my own intuition regarding how to develop the activity. My ideas challenged the way of sharing knowledge in the group. For example, our research team discussed an idea that I suggested to the participants: I asked the participants to experiment with writing short stories about different cases, and called these Solution diaries.

Data gathering through writing ethnographic field notes is challenging, and according to Neyland (2008, p. 102), the researcher has to apply several tactics. Especially during conversations important information may go unnoticed by the researcher when they write notes. I briefly wrote down the central issues in the meetings and later, after the meetings, checked and completed my notes. These field notes served as a memory device for me, as the meetings and interviews were also audio-recorded. During the observation of work activity, I had more time to write down my notes and was then able to complete them afterwards if needed.

Engeström (2006) also believes that the researcher needs to be an active developer. The researcher should not merely remain objective and disseminate the research results; they should actively help the practitioners solve problems and implement new ideas. 'Our predominantly observational and analytic methodologies need to become developmental and interventionist, without compromising theoretical ambition and empirical rigour' (Engeström, 2006, p. 1791).

In my role as a researcher I was a novice. Although I had completed a master's theses in adult education and in linguistics, this study was my first intervention-type research. As a doctoral student at CRADLE (Centre for Research on Activity, Development, and Learning) I was able to lean on the strong theoretical foundation and long tradition of formative intervention research. The guidance from my supervisors and the many fruitful discussions in the seminars of the doctoral school supported my thinking and the conduct of the intervention and this study.

When negotiating permission for research in the work unit I wrote and signed, together with a representative of the company, a research and development declaration (see, for example, Neyland, 2008, p. 145). In this declaration, the duties of the researcher, the results and schedule of the research, the publication

of the results, the sensitivity of the confidential company information and other contractual terms were agreed.

As a researcher I also adhered to the University's research ethical guidelines for a study involving human beings. The participation of the practitioners in the intervention was voluntary. Every participant was asked to sign a written consent form to give the researcher the rights to use the material collected during the intervention by observing, interviewing and audio- and video-recording as well as to use other written documents as mirror material in the CL and in scientific publications. It was agreed in the consent that the data would be considered confidential and used only for research and development purposes. Furthermore, concerning the data of individual informants, the Personal Data Act would be followed.

In the following chapter I elaborate on the research questions and their core findings: how the transformative agency of participants emerged and how it was sustained, how the participants generated innovative initiatives, and which factors contributed to the implementation of these initiatives and innovations.

## 4 MAIN FINDINGS

In this chapter I discuss the four research questions posed at the beginning of this summary. To answer the research questions, I present brief summaries of the three articles that examine the empirical findings of this study. The first research question is discussed in Article I, the second research question is discussed in Article II and the third and fourth research questions are discussed in Article III. Table 6 presents a summary of the questions and results.

### 4.1 Research question 1

The first article of this study focuses on the emergence of transformative agency among the CL intervention participants. The research question and the core findings are below:

**How does the participants' transformative agency emerge during a Change Laboratory intervention?**

Transformative agentive actions are revealed in discourse and concrete actions by questioning the existing patterns and models of the activity and performing actions of change. One could ask whether discourse concerning work can be transformative. A unit of talk, a speaking turn is also a discursive action. A CL intervention is closely related to work; it is work development and is conducted during working hours. Hence, discourse concerning work can be transformative, especially when an intervention is part of work and involves employees. By concentrating in the analysis on speaking turns and using the analytical framework of six types of expressions of transformative agency and the model of activity system, we can examine the agentive actions of the participants. The article presents the emergence and evolution of the types of expressions of transformative agency and the topical contents to which the expressions are related.

An important finding in itself and also described in this article is the manifestation of all the six types of expressions of transformative agency (see Article I, Table 3 and Figure 4). Most often, throughout the CL intervention, the practitioners used critical words to highlight issues in the work activity that needed to be developed (481 speaking turns). They also explicated new possibilities or potentials in the activity by relating to past positive experiences in 369 expressions of transformative agency throughout the CL. The envisioning of new patterns or models expressed by the practitioners (133 speaking turns) increased towards the

end of the CL intervention, being at its highest in the eighth session. The numbers of expressions of committing to action (47 speaking turns) and taking actions (42 speaking turns) were also high towards the end of the CL. As the participants were most interested in and committed to the intervention, the number of resisting expressions (26 speaking turns) was quite low and focused only on some suggestions presented or actions taken by other participants, the management or the researcher-interventionist.

Each CL session was carefully planned and was devoted to a specific theme. The topical contents of the expressions of transformative agency that were found in every session were related to the subject, the employees themselves (288 speaking turns), the shared object (237), the tools (246) and the community (137). These topics were discussed in every type of expression of transformative agency. However, the critical comments and the development ideas of explicating mainly targeted the subject and the object. The creative new ideas of envisioning focused instead on the tools used at work and collaboration in the community. The implementation initiatives in which the participants committed to take action and actually took action included those mostly related to the object and tools of the activity system. The evolution of the discussion topics of expressions of transformative agency is visualized in Table 4 and Figure 2 of Article I.

The findings of the study support the statement of Engeström, Sannino and Virkkunen (2014): that transformative agency goes beyond the individual actions to collective change efforts. The article examined the distribution of transformative agency among the participants and the possible transitions from individual to collective forms of transformative agency. Three of the participants, the supervisor Tom with 325 speaking turns, Peter with 277 turns and Kate with 178 turns, were most active in presenting initiatives and expressing transformative agency. Their critical comments and innovative ideas launched discussions to develop the work activity. It is evident that transformative agency requires collaboration to expand and prosper.

The following excerpt from the first CL session on 9 November 2010 describes how a suggestion presented by Jake launched a lively discussion about a new practice. First, Jake criticized the group for not understanding the object of their activity as a whole but as separate elements. Then, he suggested and envisioned a solution: every morning they should check the work situation and agree together on how to share the duties. The idea behind this suggestion was the perception of the big picture of work, as the object was fragmented, and everybody performed only their own tasks.

Excerpt 1 (November 9, 2010, turns 584–593)

Jake: Let's now think about the fact that how many of you understand our work as a whole. You always say this job and that job. (*Criticizing*) We ought to look at our work as a whole, what we should do altogether during the day. In fact, if this was a functioning way of working, we would every morning make an analysis of which are the most important tasks; we should carry out that day. (*Envisioning*)

Kate: Yes, precisely.

Tom, the supervisor: Thank you Jake. This sounds great.

Peter: Indeed, a collective responsibility and flexibility that we can negotiate. If you now take care of this job even though you have that ... (*Envisioning*)

Jake: Of course, we all need sufficient training to have a so-called ...

Tom, the supervisor: situational sensitivity.

Lisa: Exactly, that the sidestepping decreases. It would be flexible if everybody could do everything. (*Criticizing*)

Kate: Yes, yes.

Mary: Yes, and if it's a check every morning, we should do it together as a group. (*Envisioning*)

Jake: Yes. So that we get a common understanding.

The initiative was collaboratively discussed, and it was agreed that everybody would participate in a short meeting to distribute duties every morning at 10 am. This new practice would support everybody's awareness of the formation of the joint object of activity. The excerpt contains expressions of criticizing and highlighting the need for change, as well as envisioning new patterns. The criticism focused on the subject and the division of labour between the practitioners.

The CL process with its contents, material and working methods is usually well planned by the researcher-interventionist. Such was the case in this CL. However, the participants took over the contents and scope of discussion in a session in the middle of the CL process. The sixth session was a clear turning point (see also Kerosuo & Engeström, 2003, p. 348), which shows the formation of collective transformative agency among the participants. The purpose of the session was to discuss the present strengths and weaknesses of Solution Services and the common rules in an open-plan office. Solution diaries, photographs taken of work situations and documents from customer feedback served as mirror material and working in small groups were used as working methods. The discussion themes turned the attention to the subject of the activity system, i.e. the practitioners

themselves. The concentration of the expressions of transformative agency on the subject reveals that the practitioners needed to discuss the cohesion of their group. The group consisted of individuals who had different kinds of specialist knowledge. Questions related to the development of collaboration, the sharing of knowledge and the construction of a team had to be covered before the practitioners could continue working on issues related to the object and tools. After intensive discussions on the subject in the sixth session, the spotlight turned to the object in the seventh session.

The turning point in the sixth session was a visible, clear jump in the quantity and quality of the expressions of transformative agency. It testifies to the formation of transformative agency among the practitioners. The practitioners became more active when the discussion topics were anchored in their own ways of working, as revealed by the discussion on the strengths and weaknesses of the group and the Solution diaries. The number of speaking turns and the number of episodes with expressions of transformative agency were highest in the CL. It is worth noticing that the quantity of the expressions of transformative agency remained high in the rest of the CL sessions. In the first five sessions, a great deal of mirror material was discussed, and the processing was quite tightly controlled. But from the sixth session onwards it was less controlled and thus gave the practitioners space for freer discussion. The practitioners seized the opportunity and the progression deviated from the planned script. Such a situation shows the emergence of real transformative agency. The outcome of a CL intervention is often also a surprise to the researcher-interventionist.

This CL was reformist rather than radical. It strived to highlight problems and disturbances in the activity and to implement incremental changes instead of realizing radical changes in the work activity. It enabled participation in work development and provided the practitioners with tools and models to influence changes in ways of working and activities.

## **4.2 Research question 2**

The second article of this study addresses the sustainability of the participants' transformative agency after the CL intervention ended. The objective was to reveal whether the participants constructed a mechanism that supports the maintenance of their transformative agency. The research question and central findings are below.

**How is the participants' transformative agency sustained during a follow-up period after a Change Laboratory intervention?**

During the CL intervention, the participants were engaged in the development of work practices and were able to contribute to changes at work. After the CL ended, large-scale organizational changes in the company provoked insecurity and the employees feared that they would lose the opportunities to participate in work development that they had experienced in the CL. The experience of being engaged in work development on the one hand, and returning to former ways of working on the other, led to a conflict of stimuli, which quite soon turned into a conflict of motives. The practitioners faced a conflict of motives between the desire to participate in work development and the pressure to efficiently carry out routine duties. They started to break out of the conflict by questioning and analysing the situation in discussions among themselves, as well as with the supervisor and the researcher-interventionist during the follow-up period.

The real conflict of motives was visible in the discussions between the employees and the supervisor in the follow-up meeting on 23 September 2011. The employees criticized the lack of meetings and expressed their desire to participate and influence decision-making. As a result, the participants agreed on a new meeting practice, an instrumentality that enabled them to break out of the situation. The employees would take responsibility for organizing and running weekly team meetings. This meeting practice formed a second stimulus in the double stimulation setting. According to the principle of double stimulation, people utilize neutral cultural artefacts to instruct their activity. As Engeström, Sannino and Virkkunen (2014, p. 122) state, the second stimulus 'is not just a general instrument: it is an instrumental solution to the conflict'.

Figure 4 illustrates the structure of the double stimulation situation in Solution Services. The employees' desire to participate in continuous development represents the first stimulus. The team meeting practice represents the second stimulus. The vertical lightning-shaped bidirectional arrow depicts the conflict between the experienced lack of opportunities to participate and the maintenance of transformative agency.

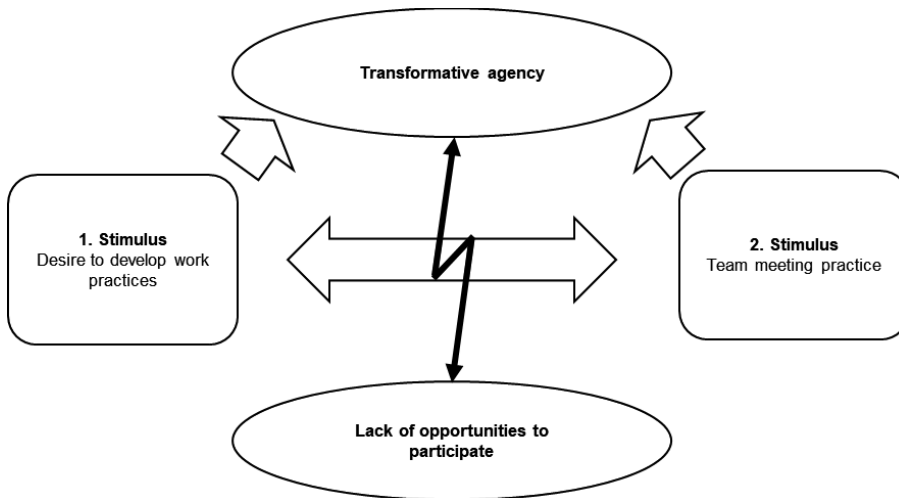


Figure 4. Structure of double stimulation in Solution Services, modified from Haapasaari and Kerosuo (2015, p. 38)

The second stimulus was not a tool created once; it was rebuilt over and over again in every meeting. The participants modified and developed the meeting practices and the tools utilized in the meetings during the follow-up period. The second stimulus was not only a solution but an instrumentality to facilitate participation in work development. Engeström (2000, p. 158) defines instrumentality as a system of instruments consisting of ‘multiple cognitive artefacts’ and ‘primary tools used in the daily practice’. Kerosuo and Engeström (2003, p. 249) highlight that ‘also talk and cognition in action are part of a contextual instrumentality’. When individual actors apply the instruments, they co-author the use in their joint discussions. The instrumentality created by the practitioners was crystallized as two tools to be used in the meetings, a plain sheet of paper on the wall and a meeting agenda. The responsibility for organizing the meetings was shared between the practitioners, the chairing of the meetings rotated from one person to another, the minutes were co-authored, and the development ideas of the agenda were generated and edited collaboratively. The use of instrumentality supported the practitioners’ transformative agency and enhanced their mastery of work. It was a second stimulus that sustained longitudinal, collective transformative agency.

The team meetings were forums in which topical issues could be discussed, criticized and developed. The most frequent types of expressions of transformative agency were criticizing and highlighting issues that needed to be changed in the current way of working as well as explicating new possibilities and potentials in the activity. This is in line with the expressions of transformative agency presented during the CL. The numbers of expressions of resistance and



envisioning new models were low to moderate. The meetings were employee led and as they were considered opportunities to influence, resistance was low. Committing to take action and taking action were also low. This is because the supervisors did not participate in every team meeting and thus, decisions were made in between meetings.

In the CL, the spotlight of discussions had been on the subject, but during the team meetings it turned to the shared object and the tools used in the activity. Cooperation in the community was at the centre of discussions in several team meetings.

Moreover, during the follow-up period, the evolution of transformative agency was not stable or linear, just as it had not been in the CL. The high points and a low point reveal that the means created for the second stimulus strongly supported the development of work-related problems in the unit but were weak in issues reaching beyond the work unit to the wider company community. The volition of the employees in the construction of the first stimulus and the co-creation of the second stimulus played an important role in sustaining the transformative agency by means of double stimulation. The risk of the meetings turning into inert routines did not actualize, as the practitioners constantly developed this new routine.

### **4.3 Research question 3**

The focus of the third article is on the initiatives and profiles of the initiative paths constructed by the participants, and the role of power relations in the promotion and prevention of the implementation of the initiatives during the CL intervention and the follow-up period. Examination of initiatives is important because transformative agency is visible in the initiation of initiatives and innovative solutions. Furthermore, agentive actions contribute to the construction of initiative paths. As transformative agency emerges from contradictions in an activity, it challenges the existing power relations and creates new power. The third research question concentrates on the initiatives presented by the participants and the fourth research question on power relations. In this section I discuss the third research question and the findings.

#### **How are initiatives developed in practice?**

Innovation processes are complex, involve several actors, and consist of various incidents along a path, developing over time. The aim was to reveal the types of innovations and the profiles of initiative paths in the longitudinal qualitative data. The analysis applied the methodological guidelines of Van de Ven and Poole

(1990). A technique called phase analysis makes it possible 'to identify and compare developmental phases in the temporal sequence data' (Van de Ven and Poole, 1990, p. 329).

The CL sessions and the team meetings during the follow-up period offered a forum for joint discussions on work practices and collaboration. The participants expressed transformative agency by highlighting issues in the activity that needed to be developed. They generated initiatives and took actions to implement new ideas and solutions to work practice problems and challenges. Innovative ideas were created by individuals, but the development and implementation required collective transformative agency.

The findings suggest that initiatives follow different paths, which lead to various outcomes. Mainly, the generated initiatives were either implemented, tested out but not implemented, or terminated. A few were implemented once but abandoned later, changed along the path, or were left open with no decision. The initiatives constructed short, medium-long and long paths. A short path showed that a decision about the future of an initiative had been decided quickly. It was either accepted and implemented or abandoned. When the initiator came from outside the group, from the management or network community, the initiative was quickly covered. On a medium-long or long path the employees and the supervisor further discussed and developed the suggestion, which resulted in either implementation, loss of momentum or termination. Ideas needing development were presented by the participants, the supervisor or the researcher-interventionist.

The generated initiatives and innovations were mainly solutions to problems experienced at work or improvements to work practices and tools used at work. According to Engeström (1995, pp. 330–331), a solution innovation is limited to one element of the activity system and is typically a new tool, a new rule or a new form of work distribution. The activity system model that was utilized in the CL sessions offered the practitioners a systematic way of locating and analysing the problems and disturbances as well as the interactions and effects of the elements on each other.

Engeström (1995, p. 331) states that process innovations are characteristically attempts to reorganize or more effectively manage certain work processes. The timespan from the first suggestion to the implementation in process innovations is notably longer than in solution innovations. Traditionally, process development is designated to specialists. In this study, the participants developed their work processes and generated solution initiatives that influenced the development of processes. Thus, process development was not located too far from the everyday work of the employees. The process initiatives and innovations constructed medium-long and long paths.

During the CL and the follow-up period, 105 initiatives were initiated. Of these, 102 were solution initiatives and three were clear process initiatives. However, some of the solution initiatives focused on developing processes.

An important finding of this study was the multifaceted nature of the innovations. Small and large initiatives and innovations intertwined, and from them, new innovations were constructed. The separate solution and process initiatives formed two clusters of initiatives, which modified the activity on the activity system level. System-level development and innovation is demanding and hence quite rare in real life. It is a process by which practitioners remodel the activity system (Engeström, 1995, p. 331). It can be hard to distinguish different types of innovations as, for example, various initiatives that contain seeds for a systems innovation may remain undeveloped. The first cluster of system-level innovations consisted of several initiatives and innovations that focused on learning and collaboration within the activity system. The second cluster consisted of many initiatives and innovations but reached beyond the activity system of the practitioners to co-operation in the wider network.

The initiatives and new ideas developed all the elements of the activity system. Figure 5 illustrates the tried-out and adopted solutions to problems and disturbances which were shown in the activity system model in Figure 3, in Section 3.3.

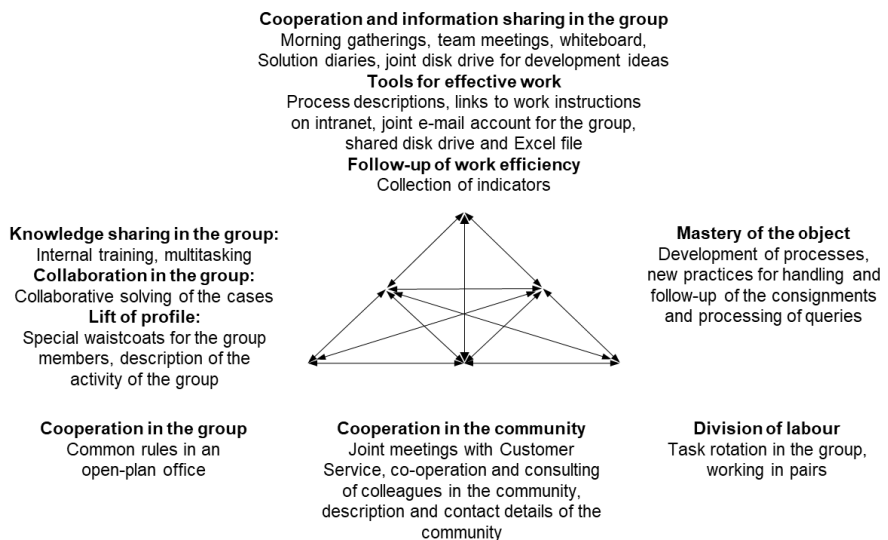


Figure 5. Initiatives and innovations for detected problems and disturbances in activity of Solution Services

The initiatives and innovations in the first cluster were solutions to problems and disturbances within the work unit. Knowledge sharing and collaboration in the group were improved by organizing internal training, multitasking and collaborative solving of the cases. To better master the growing amount of cases and the outcome, the employees developed certain work processes and created new practices for handling and follow-up. The creation of common rules in an open-plan office enhanced cooperation in the group. Furthermore, cooperation and division of labour were clarified and considered fairer when the employees introduced working in pairs and developed task rotation in the group. Solutions and new ideas for the tools mediating between the subject and the object improved collaboration, information sharing and work efficiency. Cooperation and information sharing were enhanced by several face-to-face meetings, a traditional whiteboard, electronic instruments such as Solution diaries, and a joint disk drive. Tools for work efficiency included new process descriptions, work instructions and a joint email account.

The initiatives and innovations belonging to the second cluster improved cooperation in the wider community. They included a new way of organizing joint meetings with Customer Services and consulting colleagues, as well as a description and contact details of the community. The new tools for co-development in the community were a shared disk drive and an Excel file. The identity and professional profile of the employees rose in the eyes of their colleagues as they received special waistcoats and a description of the activity of Solution Services was drawn up. A further important innovation was a new collection of indicators that showed both the practitioners themselves and the management the efficiency of the investigation processes.

The high number of initiated new ideas and solutions reveals not only the considerable amount of individual product and service initiatives and innovations but that the practitioners were highly innovative. In fact, the long follow-up of the intervention revealed that innovation is a continuous process with separate innovative product and service embodiments along the way. The continuous innovation process requires that the participants in question are engaged in work development. Furthermore, an innovation process needs forums in which ideas can be presented and developed.

The longitudinal character of this study which extended over a period of three years made it possible to examine the sustainability of the presented initiatives and innovations. At the end of the follow-up, 59 of the 61 implemented initiatives and innovations were still in use. It is evident that the sustainability of the implemented initiatives and innovations required commitment from all parties. The employee-driven initiatives were clearly sustained in a changing and turbulent work environment.

4.4 Research question 4

As introduced in the previous section, the fourth research question examines the role of power relations in the factors that contribute to or prevent the implementation of an initiative. The research question and central findings are below.

What is the role of power relations in the implementation of an initiative?

Power relations can promote collective ability and motivation to innovate but may also restrict collaboration and decision-making. The analysis applied a system of power relations that comprises power and resistance (Hardy & Clegg, 1996). Power appears on three layers: resources, processes and meanings. Resource power means the control of resources and represents ‘power over’ others. Process power is embedded in organizational decision-making processes and meaning power manifests in dominant perceptions in an organization. They represent the ‘power to’ do things. Furthermore, Blackler and McDonald’s (2000) approach to power as a product of collective activity was followed and the emergence of power from the top-down and bottom-up directions was examined.

Figure 6 depicts the four fields of power relations. The numbers indicate the initiatives in which power or resistance influenced the implementation or termination of the initiative.

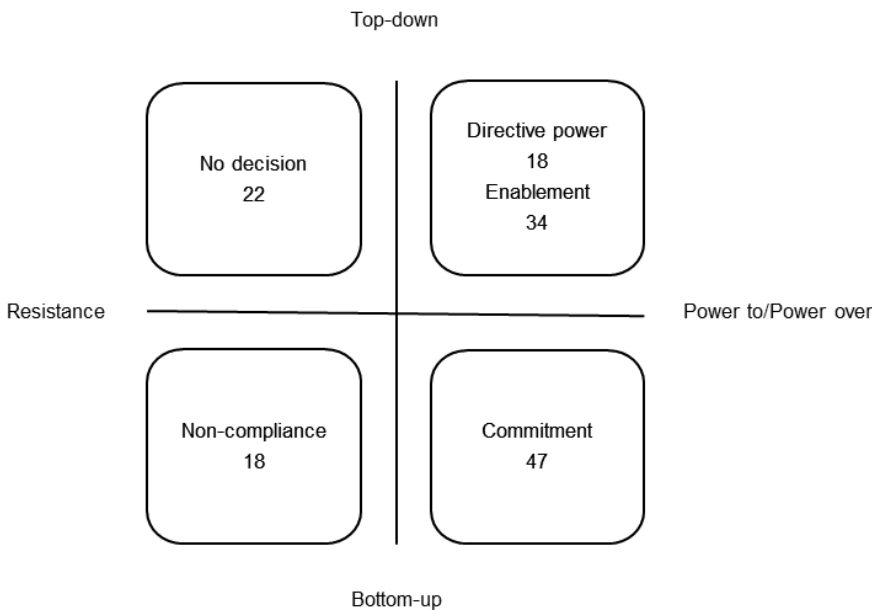


Figure 6. Four fields of power relations and number of initiatives (Haapasaari, Engeström & Kerosuo, 2018, p. 219)

The figure shows that power relations between the employees and the supervisor, as well as those between the participants and the management and the colleagues in the network, played a role in initiative initiation and development. Power relations are two-way phenomena and different ways of expressing power can be found in one discussion episode or on the same innovation path. The findings point out that resource power from the top down is a coercive form of power which needs no expressed commitment from the other party. As a representative of the management, the supervisor used resource power by dictating what work should be carried out using which instruments and practices. He used directive power to promote the implementation of an initiative or an instruction initiated either by himself or by the management.

The use of resource power was visible in the activity of the supervisor, but also in the relations between the employees. Knowledge and skills are a resource that can be used as a medium of power in the interactions of more and less experienced colleagues. The more experienced employees used the power of knowledge over the less experienced, especially when highlighting the need for change and explicating new possibilities in the activity.

An interesting finding was that top-down enablement was a form of ‘power to’ which anticipated a response from the other party. It did not appear in solitude but together with the other forms of power. Enablement and commitment came up on the same innovation paths in altogether 26 cases, enablement and non-compliance in six cases, and enablement and no decision in two cases. The supervisor enabled the employees to experiment with and develop initiatives during the CL and the follow-up period. The employee-led team meetings are a good example of top-down enablement and bottom-up commitment. It gave the employees the opportunity to use ‘power to’ influence processes and shared meanings in the organization.

Process and meaning power play an important role in innovation processes as they affect who decides which issues are placed on the agenda and hence determine the outcomes and which perceptions and voices are valued. Often, the supervisor and the management decide which issues are placed on the agenda, but in this study, especially in the team meetings, the practitioners created their own agenda and presented their ideas with the minutes to the management. Thus, they participated in the decision-making process and used power to do things. Furthermore, they used power to by committing to implement the initiatives that improved work practices or efficiency presented by the supervisor and colleagues in the group.

Managing shared meanings in a group or organization shapes existing perceptions. Meaning power was visible not only in the interactions between the

supervisor and the employees but also between the employees in situations in which power was used to influence others and promote the implementation of initiatives.

The counterpart of power in power relations is resistance. The emergence of transformative agency is visible in expressions of resistance and criticism. The capturing of change requires that the parties are involved in the change process through resistance. The factors that prevented the implementation of an initiative were related to resistance, to the fact that the implementation required decisions from the management, or to the fact that it was beyond the ability of the practitioners to influence. By not making a decision regarding a suggestion presented by an employee, the supervisor used his power to resist. The employees in turn expressed resistance when not committing to a suggestion. The analysis discovered that the employees and the supervisor utilized the opportunities to influence and develop the activity by expressing transformative agency in the field of power relations, and broke the traditional power structures. They created new power from the bottom up.

Table 6 presents the research questions posed in the opening chapter of this summary. It also outlines the results of the research questions.

Table 6. Summary of research questions and results

Article	Research questions	Results
I	How does the participants' transformative agency emerge during a Change Laboratory intervention?	<p>All the participants presented expressions of transformative agency which represented the six types of agentive action and focused on the elements of the activity system. The expressions were produced by an individual but required collaboration to expand.</p> <p>A turning point in the quality and quantity of the expressions of transformative agency in the middle of the intervention testifies to the emergence of collective transformative agency.</p>
II	How is the participants' transformative agency sustained during a follow-up period after a Change Laboratory intervention?	The creation and re-configuration of a team meeting practice, a second stimulus, contributed to the sustainability of transformative agency.

		The evolution of transformative agency with high and low points shows the support provided by the second stimulus.
III	How are initiatives developed in practice?	<p>The initiatives followed different paths, resulting in implementation, experimentation and development, or termination. All the parties involved in the activity launched initiative paths and participated in the construction of these paths.</p> <p>Employee-driven initiatives were sustained in changing circumstances and environments, as 59 of the 61 implemented initiatives were still in use at the end of the follow-up period.</p>
III	What is the role of power relations in the implementation of an initiative?	<p>Power over and power to, as well as resistance to power, contributed to the implementation of initiatives and innovations. Power was used in the top-down and bottom-up direction.</p>

In the following chapter I discuss the findings of this study in the light of the theoretical approaches presented in this summary, and draw conclusions. After this I present the theoretical, methodological and practical implications of this study.



## 5 DISCUSSION AND CONCLUSIONS

The starting point of this study was to examine work development and learning in an organization; how employees together with their supervisor learn to organize and develop their joint work. A central notion in CHAT is expansive learning (Engeström, 1987), which differs from traditional ways of learning as it is connected to radical changes in an activity and learning something potentially new that does not yet exist. Expansive learning and work development call for transformative agency. Transformative agency is a part of this special learning and development. It means climbing above the current prevailing situation and finding expansive resolutions to problems and challenges. It becomes visible when the actors take initiatives and perform actions to transform their activity. Transformative agency is not a property of an individual but a process of learning and development that emerges and evolves in collective activity. To develop and accomplish changes in an activity, the agentic actions of all parties are needed.

The aim of this study was to thoroughly examine the emergence and evolution of the transformative agency of frontline employees during a special intervention, and the sustainability of transformative agency after the intervention. Another aim was to analyse the initiatives and innovations presented by the participants: whether the initiatives constructed paths and what kind of initiative path profiles were to be found. Finally, the object was to reveal how power relations in particular impact on the development and implementation of the initiatives and innovations.

This study was conducted in an organization that was struggling with several challenges and facing winds of change in the operational environment. Demands for excellent customer service, high-quality services, cost-efficiency, an effective partnership network, and the well-being of employees require continuous improvement and development on both the organizational level and the micro-level of day-to-day activity. Work and business development are often conducted through projects that have a clear beginning and end. However, development through projects can be abrupt and the good practices invented in projects may not be sustainably implemented. Hence, an intervention empowering the practitioners may bring about sustainable changes in the activity of an organization.

Circling back to the research questions posed in the first chapter, I next discuss the findings of this study in the light of the three central theoretical concepts of transformative agency, innovation and power relations, and from the viewpoints of the theoretical approaches of CHAT, IT, ANT, and MET. These theories have

offered interesting viewpoints and revealed possibilities to empower practitioners and enable their participation in work development.

## **5.1 Transformative agency**

The first and second research questions of this study focus on the emergence and evolution of transformative agency during a special CL intervention, and how transformative agency can be sustained.

The theoretical foundation of the study is based on CHAT, which considers agency to be potentially transformative. Although agency can also exist in other forms, true transformative agency has its own characteristics. It questions existing routines, examines conflicts and disturbances, explicates and envisions new patterns and models, and makes an effort to accomplish changes in collective activity. It emerges in situations of conflicting stimuli in local activity. Actions of transformative agency evolve through interaction, through the processing of the object of the activity. Transformative agency brings new ideas to joint discussion, which can turn into innovations in local activity. An initiative or a new innovative idea is most often suggested by an individual, but it requires collective development and experimentation to be adopted and implemented, and hence, to turn to an innovation. As Engeström (2007) states, transformative agency is initiated by an individual but produced and maintained collectively. The findings of this study testify that transformative agency manifests itself in the discourse and actions of practitioners when they collectively analyse the activity and debate innovative solutions to problems and contradictions.

In IT, agency is considered an intentional and purposive action that evolves in the process of collective reflection. It is visible in institutional work that aims to create and disrupt but also maintain social structures, institutions, organizations and current day-to-day practices (Lawrence & Suddaby, 2006). Thus, agency in institutional work does not necessarily include change efforts, which is considered an important characteristic of transformative agency in CHAT. Traditionally, institutional work has been carried out by heroic, powerful institutional entrepreneurs, but more recently it has been carried out by individuals and groups of people who have a common interest or factor such as a position, a profession or a shared motive.

The site of this study was a small unit in a large national institution. Shop-floor-level employees are not always powerful enough to influence changes in the organizational field, in the organization or in social structures. However, they can initiate and bring about changes in their own and neighbouring activities, and thus with incremental steps, can create transformations in activity. The practitioners of Solution services had a common factor, a profession that required special

knowledge and expertise. They formed a small, compact work unit in which this special expertise was concentrated, and which had a joint object of activity. In IT terms, the practitioners, as experts of their own work, challenged the incumbent order in many ways, broke the dominant rules and initiated new practices.

In CHAT and in formative interventions, it is considered important that the multi-voicedness of activity systems and voices from different organizational levels are listened to. This study enabled and took into account the participation in the intervention of the supervisor as well as the management and representatives from neighbouring activities. Hence, the participating network was relatively large and the composition in the CL sessions and different meetings changed and varied depending on the questions. This interventionist stance differs from ANT, which aims to stabilize the network, which in turn may lead to turning down multiple points of view.

ANT and MET emphasize the symmetrical, relational and context-dependent nature of agency. A central point in ANT is that social action emerges and is delegated in networks of humans and non-humans. All the actors participate in the activity and enhance the action in their own ways (Latour, 2005). MET highlights the mutual engagement of humans, non-humans and the environmental conditions in the emergence of agency (Malafouris, 2013). Thus, social interaction is, according to these theories, in most situations mediated through non-humans and things. However, the analysis of the general concrete components or elements of the network remains incomplete in ANT and MET. Engeström (1996, p. 26) suggests that the inner structure of networks composed of actors, actants, mediators and intermediaries in ANT needs further examination.

The basic unit of analysis in CHAT is an activity system that has its own inner structure and dynamics. The system affects and is affected by the network to which it is connected and of which it is part. Activity systems can be examined in a fairly disciplined way because of their certain structure and inner dynamics. CHAT theorists hold the view that any activity takes place in an activity system that can be visualized as a triangle consisting of six interrelated elements. A human being is a part of this system and only an individual or a group of people can perform actions of transformative agency. However, the activity in the activity system is mediated through artefacts. Thus, mediation is a foundational idea in CHAT as well as in ANT and MET. Kaptelinin and Nardi (2006, p. 248) maintain that things have agency, as otherwise, they could not act as mediators.

The role of non-human things and materiality discussed in ANT and MET offer a fruitful theme for a dialogue with CHAT. According to ANT, a material artefact can be an intermediary or a mediator that adds something to the interaction. In CHAT, and especially in formative interventions, the principle of double stimulation is foundational and bears the idea of intentionality as mediated.

According to Vygotsky (1997a, 212) a human being controls their behaviour and will and changes the surrounding environment by using external artefacts. When a person or a group of people face a conflicting situation, they try to break out of it and change the circumstances. The situation itself is the first stimulus in the double stimulation setting. The second stimulus is a rather general artefact that people fill with situationally specific content. The second stimulus comprises the solution that people intentionally use to solve the problems caused by the first stimulus.

In this study, the practitioners confronted the conflicting situation of a desire to participate in work development and the pressure to carry out routine work effectively after the CL intervention had ended. To break out of the situation and to sustain their transformative agency they created a complex instrumentality, a team meeting practice. In the crucial mediating role of this meeting practice was a plain sheet of paper on the wall and an agenda; these served as tools for collective intentionality. The paper represented a kind of a suggestion box and reminded people to write down issues to be discussed in the following meeting. The agenda was a template that was modified several times and turned into the minutes of the meeting. It served as a collective memory device to inform absent team members and the management of the issues discussed during a meeting. The instrumentality provided the practitioners with tools to resolve the contradictions between the elements of the activity system illustrated in Figure 3.

In ANT terms, the paper on the wall and the agenda were mediators which added something to the interaction. They were not mere intermediaries; they acted as reminders and communicators. This is where ANT and CHAT have complementary views on the role of artefacts as mediators. However, the role of artefacts and tools in raising and resolving contradictions is not the focus of analysis in ANT.

This study contributes to the research on agency, especially transformative agency, by showing that transformative agency emerges from the actions of individual actors and evolves through collaborative activity. People often have an interest in and the motivation to impact on changes in their organization and work environment and to participate in the implementation of these changes. Thus, the transformative agency of the people involved should be taken as the starting point in organizational transformations. To emerge and evolve, transformative agency requires collective examination of the raw material, dilemmas, conflicts, and contradictions arising from the activity. Furthermore, the sustainability of transformative agency needs tools to support the examination, a forum in which new ideas can be initiated and discussed, as well as time for developing work and shaping the joint future.

## 5.2 Innovations

The third research question examines the generated initiatives and innovations, and the initiative paths the participants constructed during and after the CL intervention. The focus is on how the initiatives were developed in practice.

From the viewpoint of CHAT, it is fundamental that initiatives and innovations arise from the problems, tensions and contradictions in an activity system. New ideas and solutions suggested from outside of the activity are rarely success stories and seldom lead to sustainable new practices. Innovations can be new products or services, new practices or processes but also a continuous process that develops the activity and creates new ways of working in local activity. As Von Hippel and Tyre (1995, p. 12) suggest ‘innovation may best be seen as a continuous process, with particular product embodiment simply being arbitrary points along the way’.

CHAT theorists share the view of IT that initiatives can be radical changes or incremental developmental steps in an activity. IT highlights the role of institutions in maintaining stability and continuity among organizations and in organizational fields (Scott, 2008). Thus, radical innovations in particular have to gain broad support and legitimacy to be implemented. Here the powerful and heroic figures of institutional entrepreneurs play their role (DiMaggio, 1988). However, actors in institutions and organizations may also take small steps to bring about incremental changes in institutional environments.

According to CHAT, the tools and artefacts that mediate the object of an activity are essential in the interaction between people, and as tangible items can relatively concretely be developed locally, taking small steps. Puonti (2004, pp. 87–88) maintains that tools can promote collaboration between actors and visualize the joint object of activity. However, she criticizes that practitioners are often not provided with enough time for tool development and thus it is considered extra work that is no-one’s responsibility. Engeström (2008, p. 64) has examined the use of tools in collaboration and collective reflection and found that instrumental poverty may lead to difficulties in work and collaboration. There was clear instrumental poverty in the work activity of the practitioners of Solution Services. It was visible in the large amount of innovative solutions to problems and disturbances generated during and after the CL. The practitioners invented several tools that enhanced collaboration and knowledge sharing in the group as well as cooperation in the community. These tools included morning gatherings and team meetings, a paper showing the common rules in an open-plan office, a whiteboard and joint meetings with Customer Services. Tools that optimized working and the mastery of the object comprised a shared disk drive and various process descriptions. An important tool, innovation and outcome of the intervention was a measuring device, a digital tool with which the practitioners

and the management were able to build a solid overview of the situation and what was going on in the activity. I maintain that the new tools were particular product embodiments in the innovation process or on the innovation path the practitioners constructed.

The object of the activity for the employees of Solution Services was to investigate and handle deviations, mistakes and misdirected packages. The objective of the management was to find root causes for why the packages were misdirected and the reasons for deviations. Thus, innovative solutions to the question 'Why' were expected from the employees. The employees were eager to raise problematic issues and to experiment with and develop new ideas. They asked the question 'Why' several times to make their own work easier and more effective. As a result of joint development, the initiatives and innovations constructed paths of different length and resulted in implementation if they were considered useful and effective, but in termination if they were found to be useless and troublesome. Through continuous, collective development of tools, processes and practices, the practitioners could participate in and influence work development and sustain their transformative agency.

In ANT, innovations research has focused on large and long-lasting technological projects. An interesting idea that ANT has to offer this study concerning innovations is that of networks, and connections within these networks. ANT considers network building activity to be crucial for the success of an innovation (Law, 1988). The idea of local and global networks comes close to CHAT's conception of an activity system and a network of several activity systems. However, as argued in the previous section, although ANT discusses the role of actors and actants, it does not deeply analyse the internal dynamics of networks.

CHAT regards innovation to be a social process involving actors of an activity system or several activity systems that have a mutual interest and motivation to develop the activity (see Lehenkari, 2006). Innovation can take place within one activity system, but it often requires collaboration between several activity systems. Thus, innovation requires collective discussion and forums in which to exchange novel ideas. Furthermore, I highlight again that the examination of the internal dynamics of the activity system or of several activity systems is important in the analysis.

As a concluding remark, I suggest that this study contributes to the innovation literature by developing a framework for the examination of initiative paths. The profiles of initiative paths may vary depending on the initiator and on the power relations between the parties, as well as on the time needed for experimentation and development. The transformative agency of actors is essential for both the initiation and processing of the initiative.

The findings of this study show that when frontline employees were provided with opportunities to develop work activity and initiate new solutions, the initiatives and innovations were sustained in even turbulent day-to-day activity. This may be due to the fact that the initiatives and innovations were concrete incremental improvements that enhanced work practices. However, with these individual initiatives, the practitioners built qualitative changes at the level of their activity system.

### 5.3 Power relations

The fourth research question concentrates on examining factors that may contribute to or prevent the implementation of an initiative. Here, power relations are of special interest.

The principle of transformative agency highlights the active role of individuals and groups of people in taking the reins and influencing their own activity. Power emerges from this active stance. Thus, CHAT considers power to be not only a medium but an effect of collective activity (Blackler, 2011; Blackler & McDonald, 2000). The CL intervention method supports and nurtures the transformative agency of actors who utilize their opportunities to exercise power to advance joint purposes. If they do not regard the changes as essential and important, people may use their power to resist. The objective of a CL is not to strengthen the position or authority of someone in the organization, but to create new power by granting opportunities to participate. Organizational change efforts require the participation of all the parties involved.

ANT also maintains that power is an effect of collective activity in an actor network. Thus, power is not a property of a person but a mechanism, which grows along with the composition of the network for which a spokesperson acts as a representative or negotiator. However, competition and even fierce rivalry are characteristics of the network, as it is constantly modified and challenged (Latour, 1986; Law, 1986).

From the perspective of ANT, it is interesting that in this study, when he acted as a management representative, the supervisor took the role of a spokesperson for the macro-actor, the company that consists of several connections between actors and intermediaries. He used directive power, discipline and 'power over' when he dictated the rules, the available options and expectations of the employer to the employees. However, when he communicated the problems as well as the solutions and development ideas to the management and process development personnel, he was also a spokesperson for the employees, his direct subordinates and other employees in the sorting centre as well as for the intermediaries and mediators, the tools and the object. He used 'power to' when providing the

employees with opportunities to participate in the decision-making process and to influence shared meanings. This empowerment is clearly visible in the self-organization of the team meeting practice after the CL ended. The team meetings were forums for the employees to use power over and power to. The forum enabled participation in decision-making processes and the management of the unit's shared meanings. Organizational change efforts are success stories when the participants involved understand and realize the benefits and commit to the implementation of the changes.

IT emphasizes the interplay between institutional control, agency and resistance in power relations. Institutions exercise systemic power by utilizing discipline and domination to control and maintain social order (Lawrence, 2009). The activity at the site of this study is controlled by law and the efficiency requirements set by the management; thus systemic power through discipline and domination is strong. The control exercised by the institution determines the appropriate behaviour and options available in work contexts. Hardy and Clegg (1996, p. 631) refer to Foucault (1977) and state that disciplinary power is embedded in the everyday life of an organization. Subordinates are controlled not only directly by the management, but also through cultural practices and technical equipment.

According to IT, the agency of actors is visible in the episodic form of power that aims to influence and force changes. Furthermore, both actors and institutions can use resistance to impact on stability and change. In IT terms, transformative agency utilizes episodic power, influence and resistance to impact on and work out changes.

IT considers individual-level conditions such as social position in the organization and social skills to have an effect on an individual's ability to act agentically and promote new routines and practices. Both the supervisor and the practitioners used their social position and social skills when striving to advance initiatives and innovations. The social position of the Solutions Services employees in the organizational field was not strong or visible outside of the company. However, despite their low formal position in the organizational hierarchy, their informal position in organizational networks was high because of their special knowledge. Due to their long tenure, four of the employees were more experienced and thus respected by other employees and their colleagues in the network. They could use their social position and social skills, tactics and rhetorical strategies to persuade others in the group, colleagues in the network, and supervisors. Despite individual differences in competence and personal characteristics, the employees created a team that aimed to participate in work development together.



I maintain that the CL intervention clearly supported the active role of all the practitioners in work development and the emergence of power from the bottom-up direction. It provided the participants with opportunities and tools to analyse activity, to initiate and implement new practices and processes, and to use power to influence activity and work practices. As transformative agency emerges in local activity and often on the shop floor, it breaks traditional hierarchical power relations.

The management literature has compared power relations to games. Feldman and Pentland (2005, p. 98) use soccer as an example when explaining how power emerges as a consequence rather than a cause of action. Winning the game requires individual players not to kick the ball from side to side but to combine their efforts to score goals. In the first CL session, one of the practitioners, Peter, explained that they have nine players, all of whom play their own game on their own field. In an interview after the CL intervention, Peter said that during the CL they had learned to play the same game together as a team. This testifies to the formation of collective transformative agency as well as the emergence of power. The employees took the mandate and learned to collaboratively develop their work activity. Their collective developmental activity resulted as an effect of bottom-up power.

To conclude, I suggest that the contribution of this study is to bring together CHAT, IT and ANT, and to raise the role of power relations in the promotion of and the resistance to change efforts for discussion. These theories share the view that power is not a property of a person or a group but an effect of joint activity. However, CHAT has not as profoundly examined the coercive forms of power as IT and ANT; it has focused more on enabling forms of power, bringing about new power. I maintain that the activity-theoretical approach has the potential to analyse power relations, especially the emergence of new power in local organizational settings. Further research is required to widen our understanding of the field of power and resistance.

## **6 IMPLICATIONS FOR ACTIVITY THEORY AND METHODOLOGY**

The theoretical, methodological and practical implications of this study are an important topic, to which I turn in this and the following chapters. Next I discuss the implications for theory and methodology in CHAT. After this I present the practical implications from the viewpoint of the supervisor Tom. In addition to our many discussions, I interviewed him several times and conducted a DD process (Heikkilä & Seppänen, 2014) with him. During these discussions, he revealed his thoughts and insights into the CL intervention and his own professional career path.

### **6.1 Theoretical implications**

Transformative agency plays a central role in CHAT. However, research on the emergence and evolution of transformative agency during a CL intervention in CHAT is still in its early days. Generally, in the organizational scholarly literature, the emergence of agency has not received much attention. Hence, I suggest that the examination of transformative agency, particularly in organizational change efforts, calls for further and deeper analysis. Research on transformative agency requires developmental interventions, as this agency becomes visible when people are placed in demanding situations and confronted with disturbances and contradictions.

An interesting question is whether all change is transformative or expansive. Change is not equal to development (Kerosuo, 2006) and not always a positive thing. Thus, I would rather discuss development according to Engeström's (2004, p. 12) idea of the creation of a qualitatively different kind of logic or way of acting. In CHAT, transformation is understood as a developmentally significant change in an activity. In working life, this means that people search for better ways of working and abandon ineffective and unsatisfactory ways. Moreover, change does not always go forward. Development also forms a zigzag kind of movement and takes steps sideways, crosses borders and opens new opportunities. In practice, a development process is seldom purely expansive. It may mean incremental steps that the actors take when they perform actions of transformative agency.

The CL intervention method is based on the principle of double stimulation developed by Vygotsky (1997a) and further reconstructed by Sannino (2011; 2015). This principle was used in the analysis of the sustainability of transformative agency (Article II). It was evident that the practitioners collectively

succeeded to maintain their transformative agency by means of double stimulation. As a solution to the conflict of motives (first stimulus), they created an instrumental solution (second stimulus) which was constantly developed during the follow-up period. This re-configuration and continuous collaborative development of the second stimulus can be considered an interesting application of the principle of double stimulation. Thus, the findings of this study suggest that transformative agency needs to be examined as a continuous process that evolves in collective activity.

An interesting question related to change and double stimulation is whether the change generated by double stimulation is always transformative, or whether it is simply only a change. A change can be a resolution to a current problem that troubles daily life but does not necessarily promote the transformation of the activity. However, at the background of double stimulation there is always a conflict of motives. The resolution of this conflict requires transformative agentive actions. Hence, successful change, or closure triggered by the first stimulus in the double stimulation setting, is by definition transformative.

Innovations research over the past years has focused on the generation of initiatives and the implementation of innovations. Not many studies have examined the middle phase of the innovation process, how initiatives turn to innovations, and which practices and tools support the sustainability of innovations and innovativeness of employees. Interventions are needed based on the theoretical conceptions of CHAT and ones that focus on employee-driven innovations (Hasu et al., 2014). The object of this study was to examine the practices and tools that empower grass-root employees to develop work and innovate. It found that employee-driven innovation requires time, forums and tools for analysing and experimenting with developmental ideas.

New ideas and suggestions can be soft whispers or short comments expressed by an individual. However, when a colleague catches the idea, they start to develop the idea further in cooperation. This study found that the development path of an initiative can be short and result in either rapid acceptance or termination of the initiative. Elaboration can continue in several discussions and result in experimentation, after which the idea turns into an innovation that is either adopted and implemented or abandoned and terminated. This study contributed to the research of innovations, especially the examination of initiative paths, the initiators and outcomes of initiatives, and the role of power in the initiation or implementation of initiatives.

Power relations have not been the central focus of CHAT studies, even though transformative agency and power are closely related to each other. According to Engeström (2009, p. 307), the third generation of activity theory provides

possibilities for theory development through shifting the unit of analysis from a single activity system to a network of several activity systems.

This study contributes to the examination of power relations in organizations. CHAT views power both as a medium and an ongoing product of activity (Blackler & McDonald, 2000). It is not a property of a person but an effect of collective activity. The findings of this study show that power manifests itself in agentive actions in the field of power relations. Transformative agency uses 'power over' others and things by utilizing expertise and knowledge in a certain field. It uses 'power to' do things by participating in decision-making processes and managing shared meanings. This is visible when people initiate new possibilities and take actions to implement new ideas and initiatives. The counterpart of power in the field of power relations is resistance. Actions of transformative agency may resist changes but they can also identify problems and highlight the need for change by criticizing the current way of activity. The CL intervention enables participation and offers opportunities to influence common issues, hence also creating opportunities for the emergence of power from the bottom up. Thus, transformative agency generates new power.

## **6.2 Methodological implications**

Methods for analysing learning processes in CL interventions have developed in recent years. Intervention studies conducted in the early 2000s systematically examined the phases of the entire CL process (Engeström, Engeström & Kerosuo, 2003; Engeström, Engeström & Suntio, 2002; Virkkunen & Ahonen, 2004). In the second phase, which this study represents, the research interest focuses on the detailed examination of discursive expressions of transformative agency through, for example, manifestations of contradictions (Engeström & Sannino, 2011), expansive learning actions (Engeström, Rantavuori & Kerosuo, 2013) and work and activity development (Vänninen, Pereira Querol & Engeström, 2015). The data in these studies also cover the whole CL process, as in earlier studies, but the discursive expressions are thoroughly analysed to unfold the dynamics of the interaction between the actors.

This study builds on former research on the discursive expressions of transformative agency and the classification of five main types of agentive action identified by Sannino (2008) and Engeström (2011). In the CL intervention under study, the practitioners expressed a great deal of criticism of the current ways of working. It was not only negative; the expressions contained the idea that something did not function at all or functioned unsatisfactorily and thus needed attention. The expressions highlighted the need for change in the collaboration and organization of work as well as the artefacts and tools used at work. This

finding of a new type of expression of agentive action is methodologically important and further develops the analytical framework. The current framework of six main types of transformative agency serves as a useful method for future studies of transformative agency. The finding also reveals that the practitioners experienced CL as a forum in which they could bring up issues that were personally important and discuss them.

Several activity-theoretical studies have examined innovations. They have found that the contradictions in and between the elements of activity systems, as well as between different activity systems, are the source of initiation of new ideas and innovations (Engeström, 1995; Lehenkari, 2006). In this study, the CL intervention participants produced a high number of initiatives as solutions to problems, disturbances and contradictions. The classification of the three different types of innovations identified by Engeström (1995) proved to be a useful tool in the analysis. The participants focused on finding solutions to separate problems in the elements of the activity system. They also examined their work from the process perspective and improved their work processes in small steps. When the initiatives and innovations were put into the activity system model, the analysis revealed that they comprised two different clusters of system-level innovations which brought qualitative changes to the activity system. The findings of this study suggest shifting the lens of examination from individual initiatives and innovations to possible clusters of initiatives to determine how activity is and can be developed on the system level.

The longitudinal character of this study contributes to the methodological development of activity theory. Due to the extensive data covering a long period of time, it was possible to examine the emergence and evolution as well as the sustainability of transformative agency, during both the actual CL intervention and a long follow-up period. I discovered that the principle of double stimulation, which is critical in the formation of transformative agency, created a means that sustained the transformative agency of the practitioners.

The long follow-up also enabled the examination of the sustainability of the initiatives and innovations generated. This sustainability was examined utilizing the conception of path creation. The analysis applied the idea of a phase analysis (Van de Ven & Poole, 1990), so that every incident related to a certain initiative was examined and put on a timeline. As a result, a path developed over time. Based on this, the empirical data profiles of initiative paths could be modelled. Most of the initiatives followed a path that resulted in either implementation or termination. Several initiatives were tried out but lost momentum along the path. This analytical framework may also serve as a potentially useful method for future researchers.

Often in activity-theoretical studies, the method for analysing and categorizing the phenomena arises from the empirical data. This was also the case in this study. The analysis of initiatives and innovations created a new tool for the classification of power relations. Power relations comprise power and resistance. Based on the theoretical viewpoints presented by Hardy and Clegg (1996) and Blackler and McDonald (2000), as well as the empirical data, a four-field grid was drawn. The four fields show the interplay between power and resistance and by whom the power and resistance were exercised. I tentatively suggest that this classification method is utilized in future activity-theoretical research. Furthermore, I suggest that in future studies, it would be most interesting to examine the role of supervisors and management as representatives of power as a separate activity system from the activity system of employees.

Finally, I ascertain that the findings related to the three main theoretical concepts, transformative agency, innovation and power relations presented in this study have pushed the knowledge boundaries of CHAT a little bit further.

## 7 EPILOGUE: DISCUSSIONS WITH TOM

In this chapter, my aim is to capture the development path of the employees and the supervisor Tom, from the first steps of the CL intervention to the last moments of the long follow-up period. To reveal the significance of the intervention to both the employees and Tom, I will draw the path as a timeline during which the numerous discussions and interviews took place. In particular, I will describe Tom's role and insights; how he experienced the CL intervention process and what kind of practical implications this study had from his point of view.

I had several discussions with Tom before we started the CL, during the CL and during the follow-up period. In addition to telephone and email discussions, I interviewed him six times. The interviews were carefully planned. Three of them were related to the CL and three to the DD process. All six discussions were audio-recorded. The interview before the start of the CL and the first DD session were transcribed verbatim.

Tom played an important role in the launch and realization of the intervention. Before the CL he explained to the management why the CL would be an essential method for empowering the employees in work development and why they deserved to use working hours for this intervention. During the first interview before the CL, on 1 October 2010, Tom expressed great interest in the CL. He raised several problematic issues in activity and pondered that the CL could be a tool and method to solve many problems. He saw the potential, energy and passion of the employees to develop activity and wanted to enable them to participate in work development. Furthermore, he wanted to raise the profile of his group as specialists in the eyes of the other workers and supervisors in the company.

In the CL intervention, Tom's role was clearly visible in the generation of expressions of transformative agency, and the production and implementation of initiatives and innovative ideas. He was the most active producer of expressions of transformative agency. He presented 325 expressions, which was 30 per cent of all the expressions of transformative agency during the CL (Table 6 in Article I, p. 20). He was also an active initiator of initiatives and generated 28 of them, which was 26.7 per cent of all the initiatives generated during the CL and the follow-up period (Table II in Article III, p. 213).

The second interview with Tom was actually the first DD session and was conducted directly after the last CL session, on 24 February 2011. During the CL, we had agreed that to support his work as a supervisor and leader of the group, we would continue with a DD process. The DD intervention included three sessions,

the second of which was held on 9 March 2011 and the third on 24 November 2011.

The themes of the first DD session included Tom's work history, the current situation and changes at work. During the discussion, Tom pondered his own leadership skills, especially how the CL had influenced his work as a supervisor. The CL had helped him more clearly recognize his own strengths and weaknesses as a leader. In between the first and the second DD session, we both sketched our suggestions for a zone of proximal development for Tom. A zone of proximal development is the distance between the present developmental level of an individual or a collective and the possible qualitatively new level to be created and acquired with support and guidance. As Vygotsky (1978, p. 86) defines

‘It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers’.

In our second DD session on 9 March 2011, we discussed and specified the development tasks and created an action plan for Tom. One of his weaknesses had been that he wanted to be in charge of everything in the group. Hence, as a personal development task we agreed that he would delegate some duties and reorganize the work in the group so that the employees had more time to develop work activity. The time reserved for development also applied to him.

Concerning the CL, Tom told me that the triangular model of the activity system that we had drawn in the CL was still on the wall in the Solution Services workspace. Tom himself and the employees wanted it to be there to remind them of problems and contradictions as well as the suggested and implemented solutions. The idea was that they could return to the issues and initiate new solutions. It was also there to remind the employees of the changes that had taken place and that they could influence work development. They could also add more problematic issues and solutions to the model on the wall. Tom said that in a way it illustrated the trajectory of the group.

In June 2011, three months after the CL had ended, when I interviewed the employees, I also interviewed Tom. In our discussion on 16 June 2011, he praised the employees for their energy in developing activity and was proud of the results of the CL. However, due to large organizational changes Tom's responsibilities had increased and he felt powerless in the face of the future. He feared that the lack of time for development would lead to a situation in which the results achieved in the CL would come to an end.



In the third DD session on 24 November 2011, we discussed Tom's development task. The team meeting practice that had started a month before in October and for which the employees were responsible was largely the result of the employees' desire to participate in work development and the demand for a forum for discussions, but also partly a result of Tom's development task. Due to the organizational changes, Tom, together with another supervisor, had become responsible for a group of 50 employees and he envisioned conducting new CLs with his new subordinates.

The last interview with Tom was on 2 December 2013, two and a half years after the CL had ended. Even though Tom no longer worked in the company I wanted to hear his thoughts on the CL and the team meeting practice. He said that the best thing about the CL had been that the employees had been enabled to participate and influence. Based on the interviews and the analysed data I suggest that during the CL the employees became aware of their joint object of work and saw it as a whole rather than as consisting of various separate pieces of work. As Tom said in the interview:

‘When a person in some way is heard he changes his way of action. ... I think that the atmosphere improved clearly and they [the employees] really started to communicate with each other. Thus, they created clear operational models and worked independently without me always organizing the work. They involuntarily but clearly and significantly improved efficiency. The CL positively changed the work environment. They agreed on different things together and started to work in a self-guiding way. This was a clear change during the CL. ... They were so excited about the CL, it was a great thing. When I saw how they experienced it [the CL] it became a source of energy for me too’.  
(December 2, 2013)

Concerning the team meetings, Tom said that the best thing had been that the employees had developed work processes more systematically by initiating new ideas, writing them down and presenting them to those responsible for process development. They had also learned to have joint meetings, take the reins and act as chairpersons in meetings.

‘They [the employees] understood that the issue was the development of their own work. How it [the work] can be made more fluent and with which instruments and means a little bit easier. The best thing was that they started to initiate new ideas, new operational models. And that they could introduce them and implement them. ... The most challenging thing

was learning to have meetings together, to understand the role of the chairperson and secretary’. (December 2, 2013)

I maintain that practitioners are the best experts of their own work and most often have the desire and motivation to develop work practices and processes. Thus, their transformative agency needs to be supported and maintained. The findings of this study reveal that for agentive actions to survive and be sustained, forums for collective discussions and experimentation are needed. To act agentically, people need opportunities to participate and influence.

As discussed in Section 3.7, the aim of formative interventions is not to produce statistically generalizable solutions. Generalizability in this framework is understood as generativity. Generativity is not manifested in the duplication of the results in other settings but in fruitful methodological and practical variations. This CL intervention involved eight employees and their supervisor, who knew each other well and who had been working together for some time. Thus, the atmosphere was mostly open and the discussion straight and frank. The intervention supported the transformative agency of the practitioners. The situation may be different and require different tools from the CL toolkit in a bigger group of people in which the participants may share the same object but have partially competing interests.

The CL and the follow-up period required a great deal of time and energy from all parties: the employees, the supervisor and the researcher-interventionist. However, it provided opportunities for the participants to engage in work development and offered everybody new knowledge and skills. It was a great voyage of expansive learning and I am grateful to have been able to be a passenger on the journey with the hunters of lost parcels.

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## APPENDIXES

### Appendix 1. List of publications

- Huhtala, A. (2013, June). Luovimme karikkojen läpi yhdessä [We will sail close through the reefs together]. An interview with the CEO Heikki Malinen. *Pointer*, 3, 8-9.
- Kauko, H. (2012, December). Työpaikalla pitää olla hyvä tekemisen meininki [There has to be a good spirit at the workplace]. An interview with the CEO Heikki Malinen. *Pointer*, 5, 8-9.
- Koskenlaakso, L. & Laakkonen, S. (2013). Robotit tulevat, muuttuuko työelämä? [Robots are coming, will working life change?]. *Flow*, 1, 6-11.
- Martikainen, H. (2010, December). Good leadership culture encourages to an open and conversational work environment. An interview with the Senior Vice President HR Jaana Jokinen. *Pointer*, 8-9.
- Tammi-kesäkuun osavuosisikatsaus [Interim report from January to June]. (2011, August 23). *Pointer*, 4, p. 7.
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Appendix 2. Questions in interview guides for CL participants and other informants before start of intervention

Questions addressed to the CL participants:

- Tell me about your work.
- How are duties distributed in the group?
- What kind of tools do you use in your work?
- What kinds of rules regulate your work?
- How does collaboration work in the company?
- Tell me about your career path in the company.
- What is most rewarding in your work?
- What kinds of challenges have you experienced in your work?
- Tell me about a case you have handled that you remember well.
- How do you develop your work?

Questions addressed to the Customer Services representatives:

- Tell me about your work and this organization.
- How does collaboration with Solution Services work at present?
- Have there been any changes in collaboration in recent years?
- How would you improve collaboration with Solution Services?
- How do the joint tools function today?
- How would you develop the joint tools?

Questions addressed to the management representatives:

- Tell me about your work and this organization.
- What is most rewarding in your work?
- What kinds of challenges have you experienced in your work and in the organization?
- How has activity developed in recent years?

Arja Haapasaari

- Tell me about the future perspectives of the Logistics Centre/Solution Services: threats, opportunities, strengths and weaknesses.

Questions addressed to the shop stewards:

- Tell me about your work and this organization.
- How has activity developed in recent years: the actors, the object of work, tools, the community, rules, the division of labour, and problems related to these?